

# PERMITS, RENEWALS, & MODS

### Navajo Waste Water Management

Status	September 2011	October 2014	Planned
WWTP effluent to wells (gpm)	550	350	0
Wastewater flow to POTW (gpm) *	165	100	400*
RO Reject / High TDS streams to wells (gpm)	0	0	200
RO Reject to land application (gpm)	300	300	0
Well Injection system capacity (gpm)	700	465	Unknown
Well Head pressure at max rate (psig)	700	1350	1350
Well estimated life at operating pressure – static analysis (years)	5-7	2-3	Unknown
Total Waste Water (gpm)	1015	750	600

\*POTW will require expansion to increase discharge from Navajo. POTW design is 2.6 MGD. Navajo increase to 400 gpm will take POTW to 2.1 MGD.

### Navajo Waste Water Management

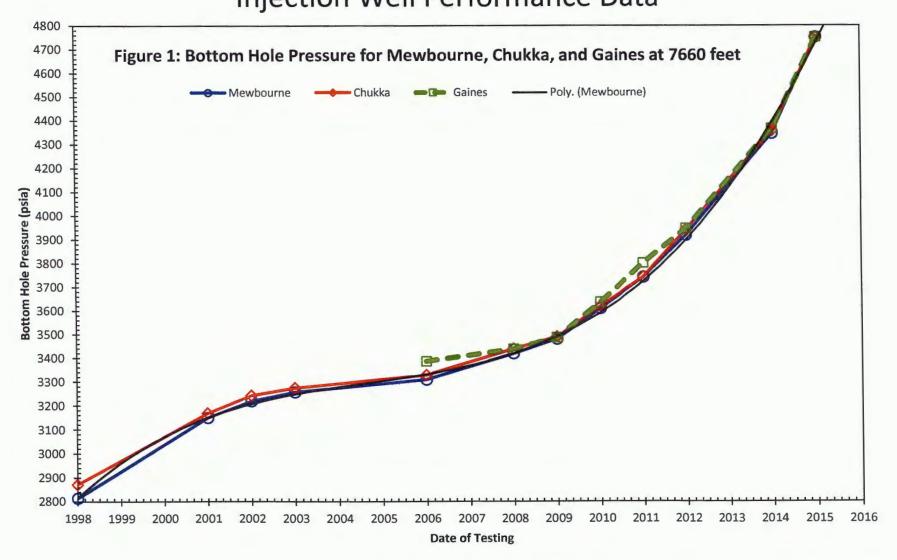
### Wastewater Management Strategy 2011 through 2012

- Reduce dry weather wastewater flow sufficient to add RO Reject stream to deep well injection
- Reduce total volume of RO reject via installation of Secondary RO
- Discontinue land application by directing RO reject to deep well injection with wastewater
- Predicated on being able to inject at 600 gpm

### Current Wastewater Management Strategy (due to injection well projections)

- Divert all WWTP effluent to Artesia POTW 400 gpm
- Direct high TDS Streams only to Injection Wells (RO Reject FCC Scrubber Boiler Blowdown)
- Installation of 4<sup>th</sup> injection well and permitting for hazardous materials to allow for stream concentration
- Neither the injection wells nor POTW have insufficient capacity to independently receive all wastewater generated by the refinery.
- Wastewater management strategy is contingent upon meeting pending POTW pretreatment standards.

### Navajo Waste Water Management Injection Well Performance Data



### Navajo Waste Water Management Injection Well Performance Projections

Predicted Rates and Volumes Through End of 2015

	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15
	100-14	Dec-14	Jail-T2	160-12	IVIdI-15	Abi-12	Iviay=15
Surface Pressure (psig)	1350	1350	1350	1350	1350	1350	1350
Injection Rates (GPM)*	372	368	362	355	349	343	337
Monthly Volume (gal)	16,070,400	16,408,875	16,137,536	14,330,759	15,594,858	14,829,212	15,052,180

	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Surface Pressure (psig)	1400	1400	1400	1400	1400	1400	1400
Injection Rates (GPM)*	343	337	331	324	318	312	306
Monthly Volume (gal)	14,833,819	15,046,891	14,765,502	14,016,884	14,202,725	13,472,261	13,639,947

Based on average injectivity decrease each week over previous six months from May, 2014 to December, 2014

### Navajo Waste Water Management

Known constituents needing reduction for discharge to POTW

Constituent	Strategy
Selenium	Remove via SeRT Unit
Total Dissolved Solids (TDS)	Send high TDS streams to injection wells*

\*Evaluation of high TDS streams indicate acceptability by receiving formation Note: POTW will require expansion to receive additional Navajo discharge.

Additional constituents potentially needing reduction for discharge to POTW

Constituent	Strategy
Total Nitrogen	Install additional capital at POTW for improved nitrogen removal to
	increase Navajo limit (3 year project)
Cyanide	Segregate high CN bearing water for well injection (2 year project)

### Navajo Waste Water Management

Additional Wastewater Management/Conservation Strategies under engineering review

- Return Hydrogen Plant Condensate to the Boiler Feed Water System
  - Will reduce Cooling Tower Blowdown to wastewater and decrease the volume of fresh water needed for boiler feed water.
- Install water quality based capital upgrades to improve reliability toward meeting Artesia POTW pretreatment standards:
  - Desalter oil/water separation improvements
  - Revamp of existing SeRT unit to improve Selenium removal.
  - Segregation of CN bearing water for future well disposal.
- Install fourth injection well as contingency for high TDS streams and seek permitting for hazardous wastewaters
- Reuse of stormwater in refinery processes

### Waste Water Management Planning Sequence of Events

October 2011	Navajo distributed RFP for Phase 1 Waste Water and RO Reject Alternatives Study	
December 2011	<ul> <li>Proposals received to develop list of all treatment alternatives for 3 objectives</li> <li>Selenium Reduction</li> <li>RO Reject and High TDS stream management</li> <li>Treatment requirements for potential future direct and/or POTW discharge</li> </ul>	
January 2012	Finalized consultant choice – CH2M Hill awarded project – Held Initial kickoff meeting	
February - April 2012	Project start delayed due to refinery Turnaround – unable to get representative sample Navajo begins independent selenium treatment process evaluations of available technologies	
June 2012	Official Phase 1 project kickoff: List and description of available technologies based on Navajo waste water quality.	
August 2012	Phase 1 technical memorandums received	
September 2012	CH2M Hill kickoff on Phase 2 of project: Detailed analysis of alternatives	
January 2013	Phase 2 report and analysis received from CH2M Hill	
January - February 2013	Navajo review of detailed alternatives analysis Two alternatives chosen for each objective for further development	

### Waste Water Management Planning Sequence of Events - Continued

March 2013	CH2M Hill kickoff on Phase 3 of project: Class 4 design and cost of chosen alternatives	
April 2013	Subsurface study results indicate injection well life at < 12 months at current pump pressure	
June 2013	Permit modification request to install booster pumps at wells	
August 2013	Phase 3 technical memorandums received	
September 2013	<ul> <li>Navajo distributed RFP for process engineering of chosen alternatives</li> <li>1. Selenium Reduction: SeRT Unit Design</li> <li>2. RO Reject / high TDS streams: Secondary RO and transfer system to injection wells</li> <li>3. Direct/POTW Discharge: Navajo WWTP revamp to enable RO treatment of waste water.</li> </ul>	
October 2013	Proposal clarifications made and accepted Installed the FeCl injection to reduce waste water effluent selenium concentration	
November 2013	Process Engineering Kickoff	
November-December 2013	CH2M Hill redirected from engineering to assist with Selenium issue Startup of Booster Pumps at wells	
January 2014	Process Engineering of alternatives restarted	
July 2014	Engineering complete – all design documents received	

### Waste Water Management Planning Sequence of Events - Continued

August 2014	Navajo distributed RFP for Secondary RO (SRO) detail design and construction
September 2014	Contractor chosen for SRO detail design and construction Navajo distributed RFP for SeRT detail design and construction Navajo receives updated projections on injection well life based on 2014 PFOTs
October 2014	Working final clarifications with chosen SRO contractor. Design and construction schedule 7 months from official award (November 2014 start)
November 2014	Navajo to receive proposals and choose contractor for SeRT detail design and construction

### Artesia POTW Pretreatment Standard Sequence of Events

January 2011	City of Artesia POTW issued draft pretreatment standards for Navajo review Standards based on ordinances at other New Mexico POTW's
October 2011	Navajo seeks consultant to develop treatment and discharge strategies including POTW
July 2013	POTW agrees to use CH2M Hill to set Navajo pretreatment standards per EPA guidelines and Technically Based Local Limits (TBLL) development procedure.
August 2013	<ul> <li>POTW NPDES renewal includes provisions to develop pretreatment standards per Significant Industrial User (SIU) requirements (including TBLL development)</li> <li>Proposal and Schedule provided by CH2M Hill (funded by Navajo – 1 year schedule)</li> <li>8 months to develop limits for approval – target completion June 2014</li> <li>4 months for administrative closure – target completion October 2014</li> </ul>
September - October 2013	CH2M Hill review of NPDES permit, POTW site, and City wastewater collection system
October 2013	CH2M Hill performs influent scan for Pollutants of Concern (POC's)
March – June 2014	TBLL sampling event delayed due to POTW maintenance issues and need to startup standby treatment train Review of City Industrial Pretreatment Ordinance

# Artesia POTW Pretreatment Standard Sequence of Events - Continued

July 2014	Startup of standby treatment train (both trains in service)
	Passage of Industrial Pre-treatment Ordinance by City of Artesia
July – August 2014	POTW working through maintenance and optimization issues for operating both trains simultaneously
September 2014	Additional TBLL sampling event delay due to heavy rain
	Meeting with POTW to discuss Navajo discharge increase
	<ul> <li>POTW agreeable with Navajo assistance on needed expansion to</li> </ul>
	accommodate increased discharge over long term.
October 2014	Sampling event scheduled for week of October 27
	Limits calculations and preparation for approval complete 8 weeks after sampling
	event
January 2015	Limits identified to determine Navajo treatment requirements
	TDS, Chloride, and Selenium positively identified during study work to date
	<ul> <li>Total Nitrogen and Cyanide potential limits of concern pending final TBLL work</li> </ul>

### Navajo Water Conservation Topics / Strategies

Lose water rights credits on loss of RO Reject land application - 52.6 million gallons per year

Navajo actively pursuing additional water rights

Artesia City Water Emergency Conservation Ordinance – November 2014

Stormwater retention pond/tank and filtering equipment to enable re-use of water captured during heavy rain events.

Install capital upgrades at the WWTP to enable water treatment and recovery via waste water RO system.

- Upgrade the Dissolved Air Floatation (DAF) system for enhanced oil and metals removal.
- Install new Membrane Bio Reactors (MBR) to further reduce constituents that can foul RO equipment.
- Install Ultra-Filtration System to minimize constituents that can plug RO equipment.
- Install RO system to treat final Waste Water effluent and enable 60% re-use

Steam and condensate system capital upgrades to minimize condensate losses to wastewater.

Recycle POTW effluent as refinery makeup water

Installation of 4<sup>th</sup> well and permitting for hazardous use

### Waste Water and RO Reject Treatment Alternatives Evaluated

Selenium Reduction

- Phillips 66 SeRT adsorption process (only process in refinery operation)
- MAR Systems adsorption process (pilot plants only)
- Siemens chemical conversion process (pilot plants only)
- Anoxic Reduction (used in power plants and mining industry)

RO Reject and High TDS Stream Management

- Expand RO capacity to increase water recovery and reduce RO Reject volume
- Identify and collect additional high TDS streams for RO treatment
  - Reject discharge options
    - Injection wells
    - Evaporation Pond
    - Evaporator/Crystallizer (No known plants in refineries)

# Waste Water and RO Reject Treatment Alternatives Evaluated

Treatment requirements for potential future direct and/or POTW discharge

Cyanide Reduction (if needed)

Install independent FCC sour water system and send stripped water to injection wells

Total Nitrogen Reduction (if needed) - Options

- Install anoxic step and revamp existing WWTP
- Seed POTW with BOD additive to enhance nitrogen removal
- Revamp POTW to increase nitrogen removal capability

Comparison of Navajo WWTP and POTW Revamp scope to meet effluent requirements

- Revamp of Navajo WWTP has advantage due to lower volume
  - Navajo 0.6 MGD
  - POTW 2.1 MGD

HOLLYFRONTIER.

September 3, 2015

Oil Conservation Division NM Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505

Certified Mail/Return Receipt 7014 3490 0000 6269 9022

#### RE: WQA-OCD-CO-2015-002 Application for Modification; Proof of Notice Discharge Permit GW-028 Navajo Refining Company, L.L.C.

Dear Sirs:

Navajo Refining Company (Navajo), Artesia Refinery, hereby submits the following and enclosed proof of notice of the application for a modification to Discharge Permit GW-028, in accordance 20.6.2.3108.B New Mexico Administrative Code (NMAC) and 20.6.2.3108.D NMAC:

- Attachment 1: Affidavit of Postings with Exhibits "A" and "B" (20.6.2.3108.B(1) NMAC);
- (2) Attachment 2: Affidavit of Mailings and List of Property Owners with Exhibits "A" and "B" (20.6.2.3108.B(2) NMAC); and
- (3) Attachment 3: Publisher's Affidavit of Publication of a synopsis of the public notice in the *Artesia Daily Press*. (20.6.2.3108.B(4) NMAC)

If you have any questions or comments, please do not hesitate to contact me at 575-746-5487 or Robert A. Combs at 575-746-5382.

Sincerely,

with

Scott M. Denton Environmental Manager

Enclosures

cc. HFC: D. McWatters, R. O'Brien, M. Holder OCD: A. Marks, B. Brancard

> Navajo Refining Company, L.L.C. 501 East Main • Artesia, NM 88210 (575) 748-3311 • http://www.hollyfrontier.com

#### **Public Notice Information**

Navajo is providing the information below as required by 20.6.2.3108B NMAC regarding public notice of the permit modification request.

#### 20.6.2.3108B(1) Location of Public Notice Display

A synopsis of the public notice will be posted for 30 days in both English and Spanish and at least two feet by three feet in size in two locations: 1) on the Refinery fence near the northwest corner of the North RO reject field, and 2) outside of the main Refinery offices at 501 East Main, Artesia, NM 88210.

#### 20.6.2.3108B(2) Nearby Property Owners

Notice of the proposed modification will be mailed to property owners located with 1/3 mile of the Refinery boundary, or to the nearest adjacent landowner.

#### 20.6.2.3108B(2) Discharge Site Owner Notification

Navajo owns the discharge location property; therefore, this section is not applicable.

#### 20.6.2.3108B(4) Newspaper Publication

A synopsis of the public notice will be published once by Navajo in the *Artesia Daily Press* in both English and Spanish and in a display ad at least three inches by four inches in size and not in the classified or legal advertisements section.

#### 20.6.2.3108D Proof of Public Notice

Within 15 days of completion of public notice requirements, Navajo will submit to OCD an affidavit of mailings and property owners, an affidavit of posting, and proof of publication from the *Artesia Daily Press*.

### Attachment 1

STATE OF NEW MEXICO ) ) COUNTY OF EDDY )

Groundwater Discharge Permit GW-028

#### **AFFIDAVIT OF POSTINGS**

In accordance with WQCC Rule 3108.B (20.6.2.3108.B NMAC) and WQCC Rule 3108.D. (20.6.2.3108.D NMAC), I hereby certify that a synopsis of the public notice of the application by Navajo Refining Company, L.L.C. for a modification of Groundwater Discharge Permit GW-028 was posted on July 30, 2015. The synopsis was posted in both English and Spanish on signage each at least two feet by three feet in size in two locations: 1) on the Artesia Refinery fence near the northwest corner of the North Reverse Osmosis reject fluids discharge field, facing W. Richey Avenue; and 2) outside the Artesia Refinery's main administrative offices at 501 East Main, Artesia, NM 88210. The language of the synopsis, as posted in English and Spanish, is provided in "Exhibit A," and photographs of the two postings are provided in "Exhibit B."

Date: SEPTEMBER 3, 2015

Scott M. Denton Environmental Manager The HollyFrontier Companies Navajo Refining Company P.O. Box 159 Artesia, NM 88211-0159

Attachments

SUBSCRIBED AND SWORN to before me on this 31

prach filmer

day of September 2015.

My Commission Expires:

30/15

#### NOTICE OF PERMIT MODIFICATION REQUEST

On May 22, 2015, the Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico, Refinery (the Refinery), applied to the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD) for a modification of Groundwater Discharge Permit (GW-028). The modification includes the addition of a temporary reverse osmosis (RO) unit at the Refinery to treat water for utility use and an increase in the amount of RO reject water authorized for land application in the permitted discharge. As specified in 20.6.2.3108B New Mexico Administrative Code (NMAC), the Refinery is providing this notice of permit modification request to all persons on the facility mailing list. This notice includes the information required by 20.6.2.3108F NMAC.

The Refinery operates two permanent RO units to treat raw water for use as boiler feed water or cooling tower makeup water in the Refinery process. An additional RO unit has been installed to serve as a backup unit for the existing permanent RO units in the event of a maintenance shutdown and to supplement the capacity of the two existing permanent RO units operating at the facility. Due to the increased processing capacity of the Refinery and the corresponding demand for boiler feed water and cooling tower makeup water, use of the temporary RO unit has increased over time.

The water treatment process produces reject fluids that are authorized in the Discharge Permit to be applied within the Refinery's property at a daily maximum of approximately 10,000 bbl/day. Navajo is requesting that the discharge limit in Discharge Permit GW-028 be increased to approximately 20,000 bbl/day (calculated on a 12-month rolling average basis) due to increased refining capacity and the need for a corresponding increase in boiler and cooling tower operations. Per Discharge Permit GW-028, land application of RO reject water is scheduled to terminate on or before October 21, 2016.

Ground water that may be affected by the discharge occurs at a depth of approximately 25 feet below ground surface with a total dissolved solids concentration of approximately 2,500 mg/L. The requested increased discharge volume is not expected to affect existing groundwater quality. Based on analysis of the RO reject fluids to date, chloride, fluoride, sulfate, and total dissolved solids are potential constituents of concern.

The Refinery is located at 501 East Main, Artesia, NM, 88210 in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County. The discharge, increased in volume, will continue to be applied to the surface of an open space within the Refinery boundaries, which is located on the northern part of the Refinery east of US-285 and south of East Richey Avenue. The northern discharge point is located 1255 feet south of East Richey Avenue and 1569 feet east of US-285. The southern discharge point is located 2532 feet south of East Richey Avenue and 2208 feet east of US-285.

Comments, questions, and requests for a copy of the application (either a paper copy or an electronic copy via the internet) should be sent to the following OCD contact:

Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons wishing to receive future notices.

#### AVISO DE SOLICITUD DE MODIFICACIÓN DEL PERMISO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

El día 22 de Mayo de 2015, la Refinería Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico (NM) (la Refinería), solicitó a la División de Conservación de Petróleo (Oil Conservation Division) (OCD) del Departamento the Energía, Minerales y Recursos Naturales de Nuevo México (New Mexico Energy, Minerals & Natural Resources Department) una modificación del Permiso de Descarga de Agua Subterránea (Formulario GW-028). La modificación abarca la adición una unidad de ósmosis inversa (OI) temporaria en la Refinería para tratar agua utilitaria, como así también un aumento en la cantidad autorizada de agua de rechazo de la OI a ser aplicada al campo como parte de las descarga permitida. Conforme al Código Administrativo de Nuevo México (NMAC) 20.6.2.3108 B, la Refinería publica el presente aviso de solicitud de modificación del permiso a todas las personas en la lista de contactos de la Refinería. Este aviso incluye la información requerida por NMAC Sección 20.6.2.3108F.

La Refinería opera dos unidades OI permanentes para tratar aguas no tratadas para uso en calderas o en torres de enfriamiento en el proceso de la Refinería. Una unidad OI adicional ha sido instalada para servir como unidad de respaldo para las unidades OI permanentes durante la desactivación para mantenimiento, y para suplementar la capacidad de las unidades OI permanentes que operan en la instalación. Debido al aumento de capacidad de procesamiento de la Refinería y la correspondiente demanda de agua tratada para calderas y torres de enfriamiento, el uso de la unidad OI temporaria ha incrementado.

El proceso de tratamiento de agua produce fluidos de rechazo autorizados en el Permiso de Descarga, los cuales serán depositados dentro de la propiedad de la Refinería en una cantidad diaria máxima de 10.000 barriles por día (bbl/día). Navajo solicita que el límite de descarga en el Permiso de Descarga GW-028 sea aumentado a 20.000 bbl/día (calculado a la media móvil de 12 meses) debido al aumento de la capacidad refinera y al correspondiente aumento operacional de calderas y torres de enfriamiento. Conforme al permiso de descarga GW-028, la aplicación del agua de rechazo al campo ha de finalizar el 21 de Octubre de 2016, o con anterioridad esa fecha.

El agua subterránea potencialmente afectada por la descarga se encuentra a una profundidad aproximada de 25 pies (7,6 metros) bajo la superficie de terreno, con una concentración total aproximada de sólidos disueltos (total dissolved solids) de 2.500 miligramos por litro (mg/L). No se anticipa que el aumento del volumen de descarga solicitado produzca ningún impacto negativo en la calidad existente del agua subterránea. Sobre la base del análisis de los fluidos de OI realizados hasta la fecha, componentes tales como cloruro, fluoruro, sulfato y cantidad total de sólidos disueltos merecen atención.

La Refinería está ubicada en 501 East Main, Artesia, NM, 88210 en SE/4 de la Sección 1, E/2 de la Sección 8, W/2 de la Sección 9, N/2 de la Sección 12, poblado 17 sur, Rango 26 este, NMPM, condado de Eddy. La descarga, de mayor volumen continuará siendo aplicada a una superficie abierta dentro de los límites de la propiedad de la Refinería, la cual está ubicada en la parte norte de la Refinería, al este de la carretera US-285, y sur de la Avenida East Richey. El punto norte de descarga está ubicado a 1255 pies al sur de la avenida East Richey y a 1569 pies al este de la autopista US-285. El punto sur de descarga está a 2532 pies al sur de la avenida East Richey y a 2208 pies al este de la autopista US-285.

Comentarios, preguntas, y petición de una copia de la presente solicitud (en papel o electrónica, vía in internet), pueden ser enviados al siguiente contacto de la OCD:

Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

La OCD aceptará comentarios y declaraciones de interés con respecto a esta solicitud y creará una lista de contactos específica para todas personas que deseen recibir avisos en el futuro.



Exhibit B – Posting outside of the main Refinery offices at 501 East Main, Artesia, NM 88210



Exhibit B – Posting on the Refinery fence near the northwest corner of the north RO field

### Attachment 2

STATE OF NEW MEXICO ) ) COUNTY OF EDDY )

Groundwater Discharge Permit GW-028

#### **AFFIDAVIT OF MAILINGS AND PROPERTY OWNERS**

In accordance with WQCC Rule 3108.B (20.6.2.3108.B NMAC) and WQCC Rule 3108.D. (20.6.2.3108.D NMAC), I hereby certify that a copy of the attached notice ("Exhibit A") of the application by Navajo Refining Company, L.L.C. for a modification of Groundwater Discharge Permit GW-028 was deposited with the United States Postal Service on Friday, July 31, 2015. Each notice was mailed, postage pre-paid, to the mailing addresses of the owners of record ("Exhibit B") of all properties within a 1/3 mile distance from the property boundary of the Navajo Refining Company, L.L.C. Artesia Refinery, where the discharge site is located.

Date: September 3, 2015

Scott M. Denton

Environmental Manager The HollyFrontier Companies Navajo Refining Company P.O. Box 159 Artesia, NM 88211-0159

Attachments

SUBSCRIBED AND SWORN to before me on this \_\_\_\_\_\_ day of September 2015.

nef-plan

My Commission Expires:

9/30/2015

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#### NOTICE OF PERMIT MODIFICATION REQUEST

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The Refinery operates two permanent RO units to treat raw water for use as boiler feed water or cooling tower makeup water in the Refinery process. An additional RO unit has been installed to serve as a backup unit for the existing permanent RO units in the event of a maintenance shutdown and to supplement the capacity of the two existing permanent RO units operating at the facility. Due to the increased processing capacity of the Refinery and the corresponding demand for boiler feed water and cooling tower makeup water, use of the temporary RO unit has increased over time.

The water treatment process produces reject fluids that are authorized in the Discharge Permit to be applied within the Refinery's property at a daily maximum of approximately 10,000 bbl/day. Navajo is requesting that the discharge limit in Discharge Permit GW-028 be increased to approximately 20,000 bbl/day (calculated on a 12-month rolling average basis) due to increased refining capacity and the need for a corresponding increase in boiler and cooling tower operations. Per Discharge Permit GW-028, land application of RO reject water is scheduled to terminate on or before October 21, 2016.

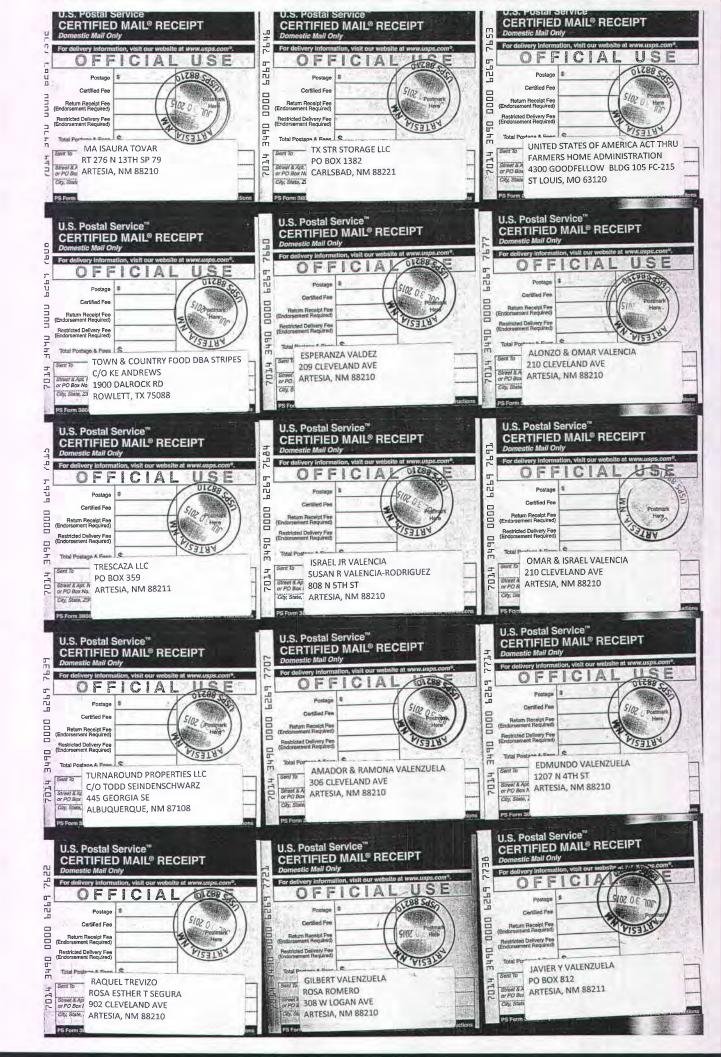
Ground water that may be affected by the discharge occurs at a depth of approximately 25 feet below ground surface with a total dissolved solids concentration of approximately 2,500 mg/L. The requested increased discharge volume is not expected to affect existing groundwater quality. Based on analysis of the RO reject fluids to date, chloride, fluoride, sulfate, and total dissolved solids are potential constituents of concern.

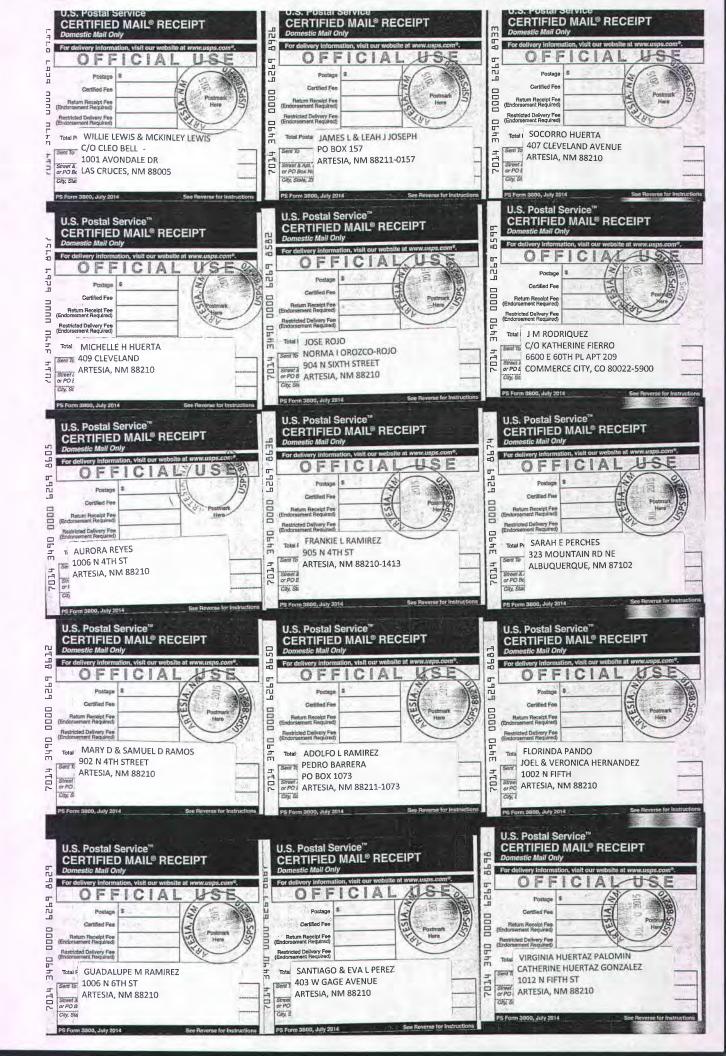
The Refinery is located at 501 East Main, Artesia, NM, 88210 in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County. The discharge, increased in volume, will continue to be applied to the surface of an open space within the Refinery boundaries, which is located on the northern part of the Refinery east of US-285 and south of East Richey Avenue. The northern discharge point is located 1255 feet south of East Richey Avenue and 1569 feet east of US-285. The southern discharge point is located 2532 feet south of East Richey Avenue and 2208 feet east of US-285.

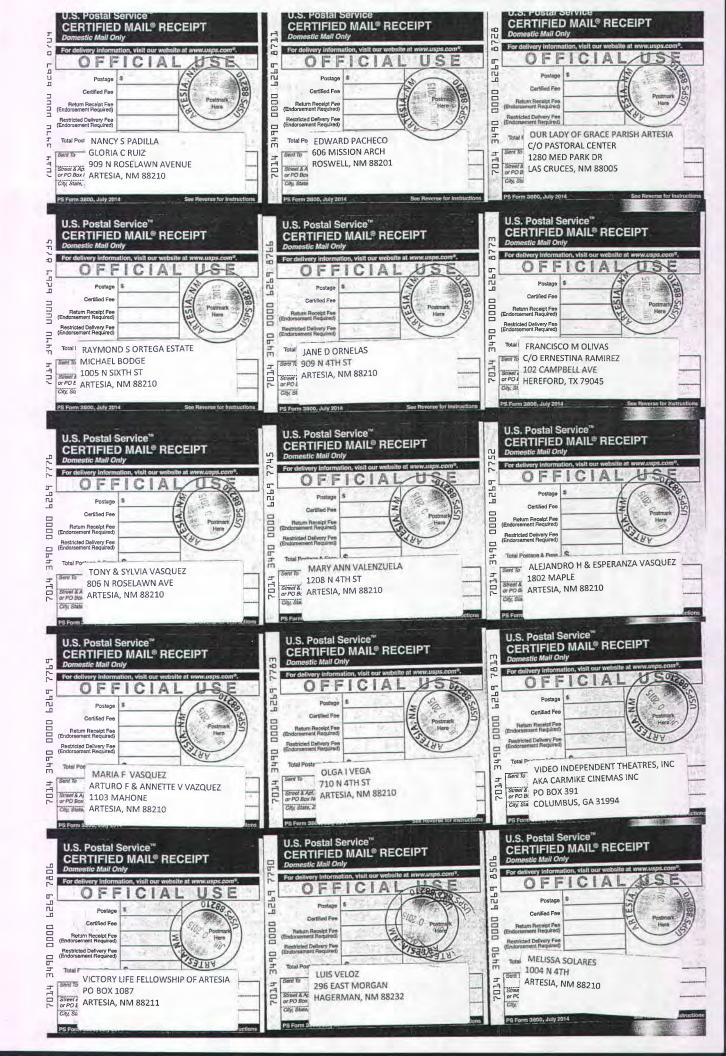
Comments, questions, and requests for a copy of the application (either a paper copy or an electronic copy via the internet) should be sent to the following OCD contact:

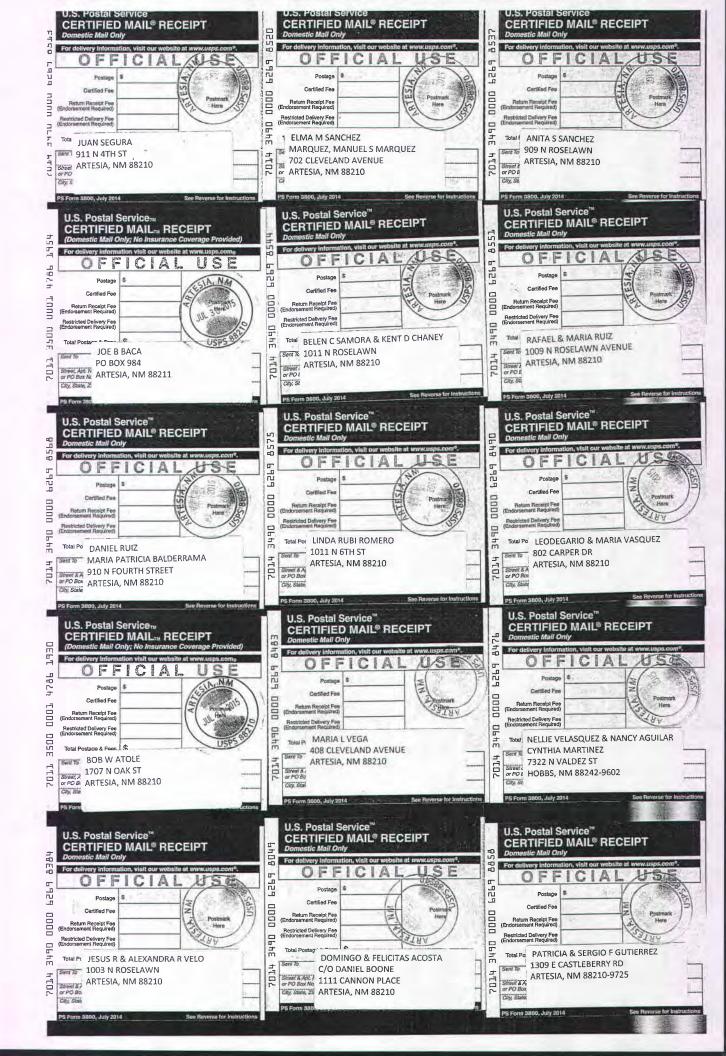
Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

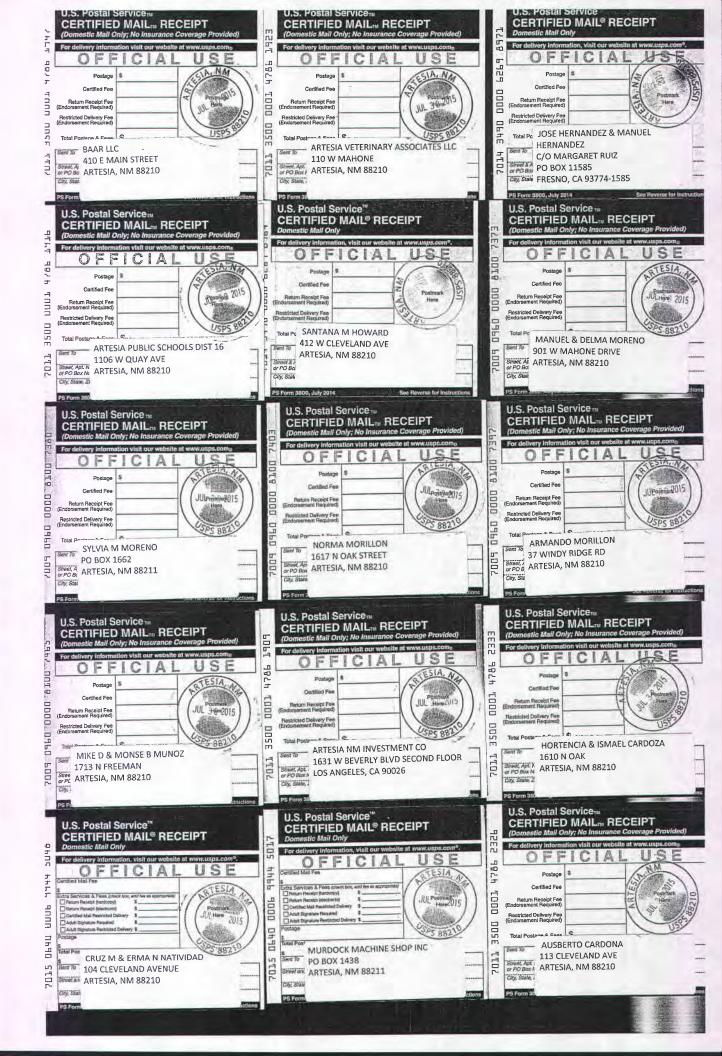
The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons wishing to receive future notices.

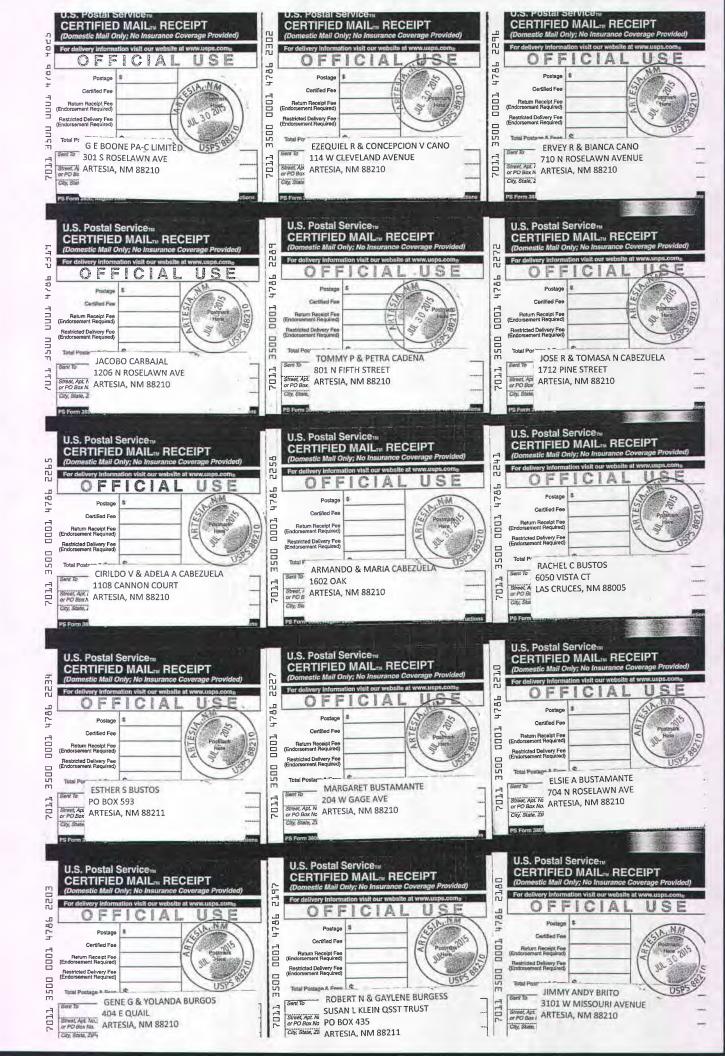


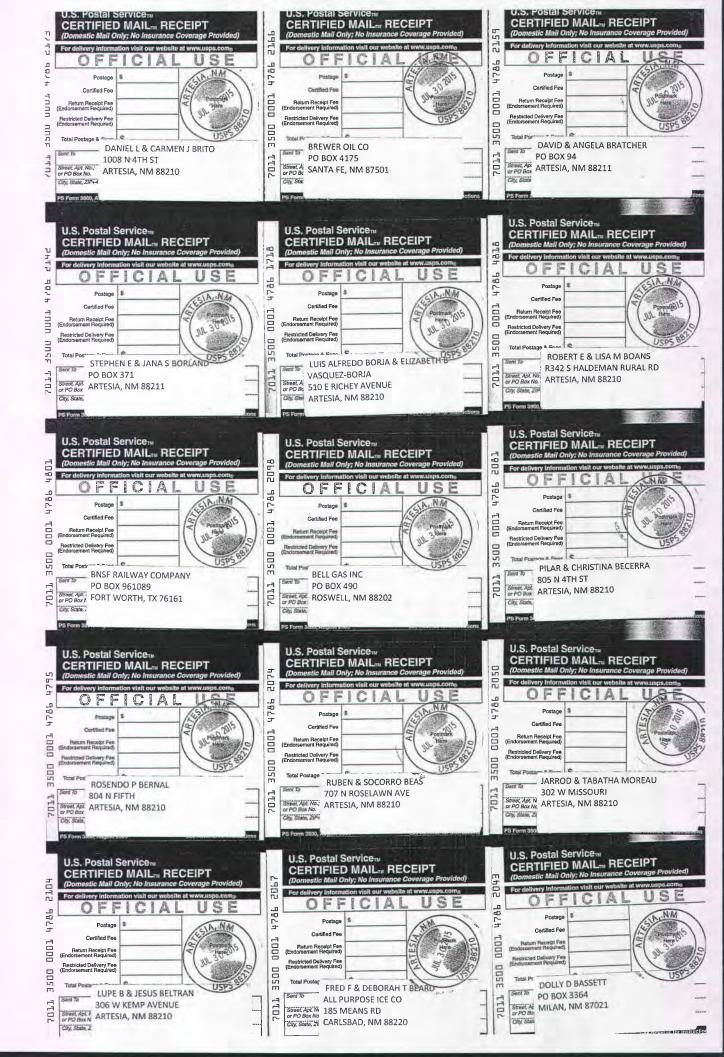


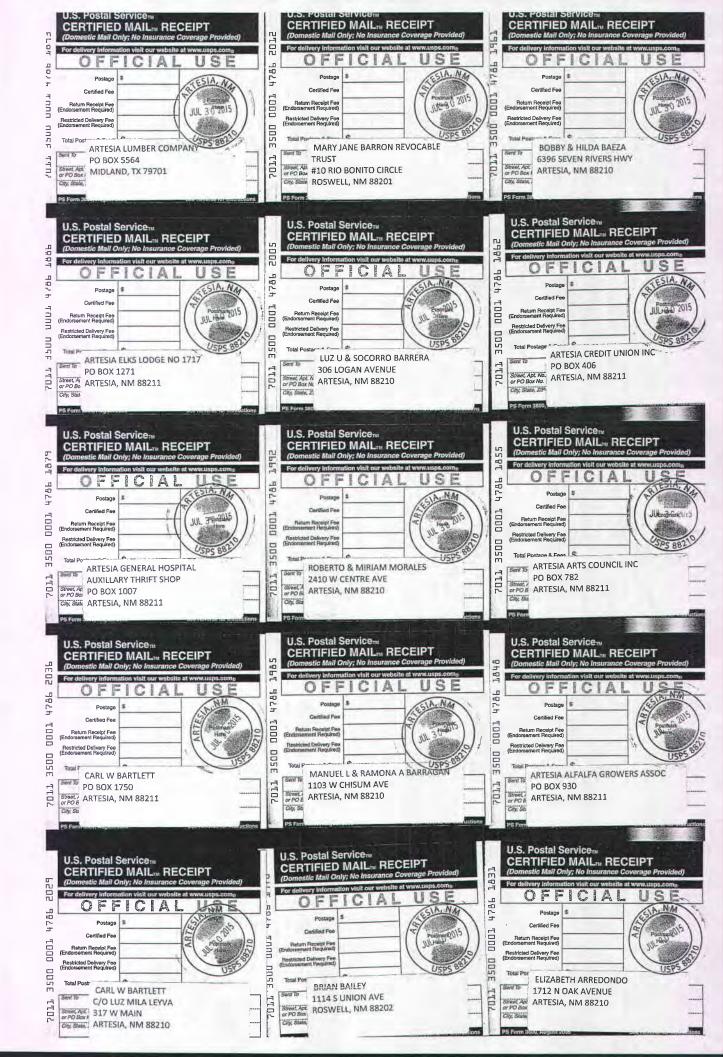


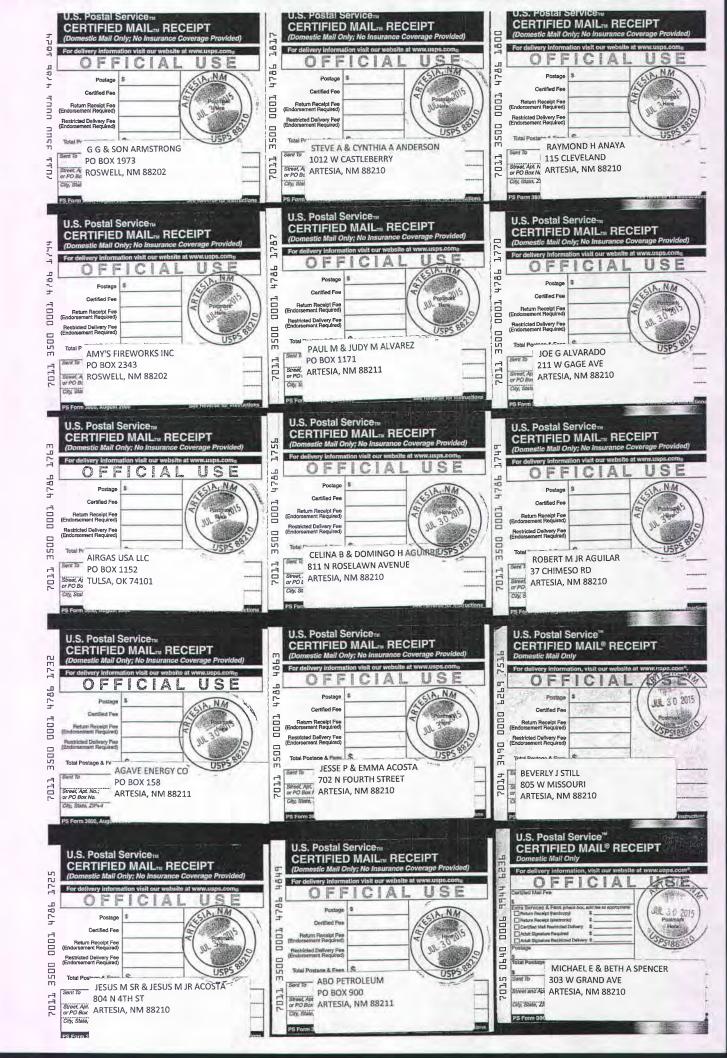


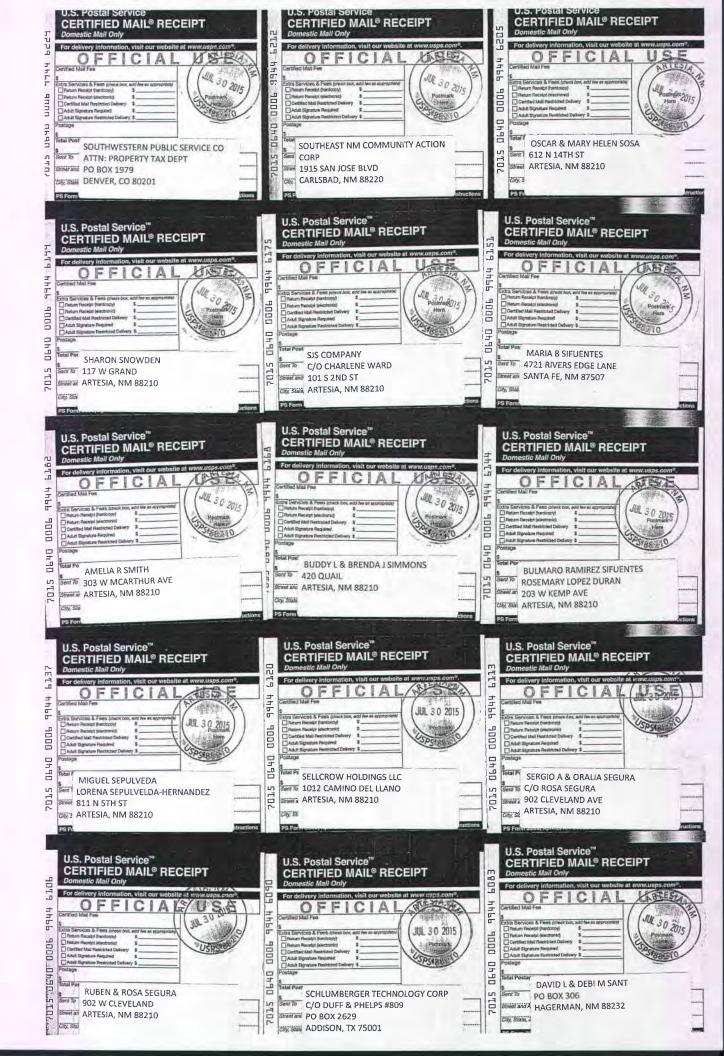


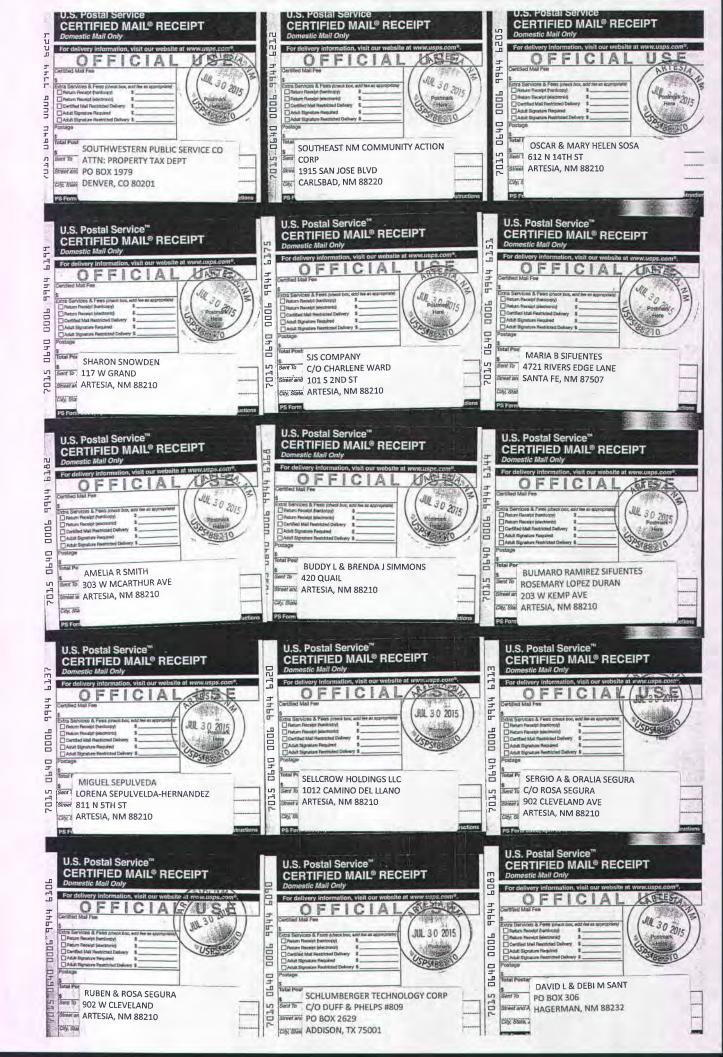


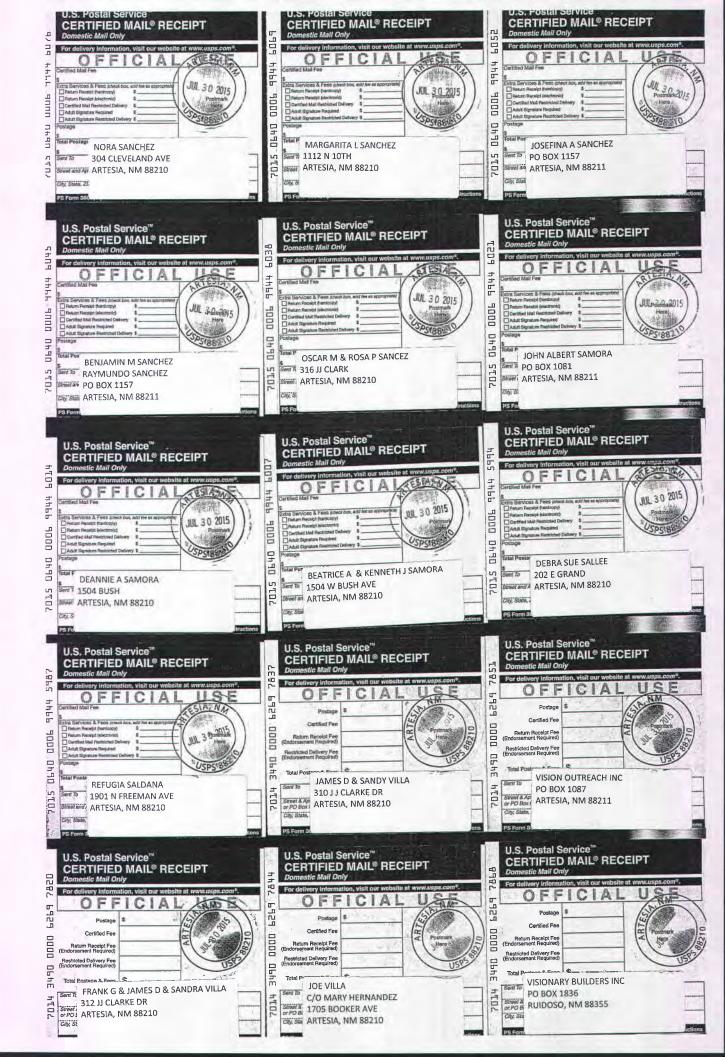








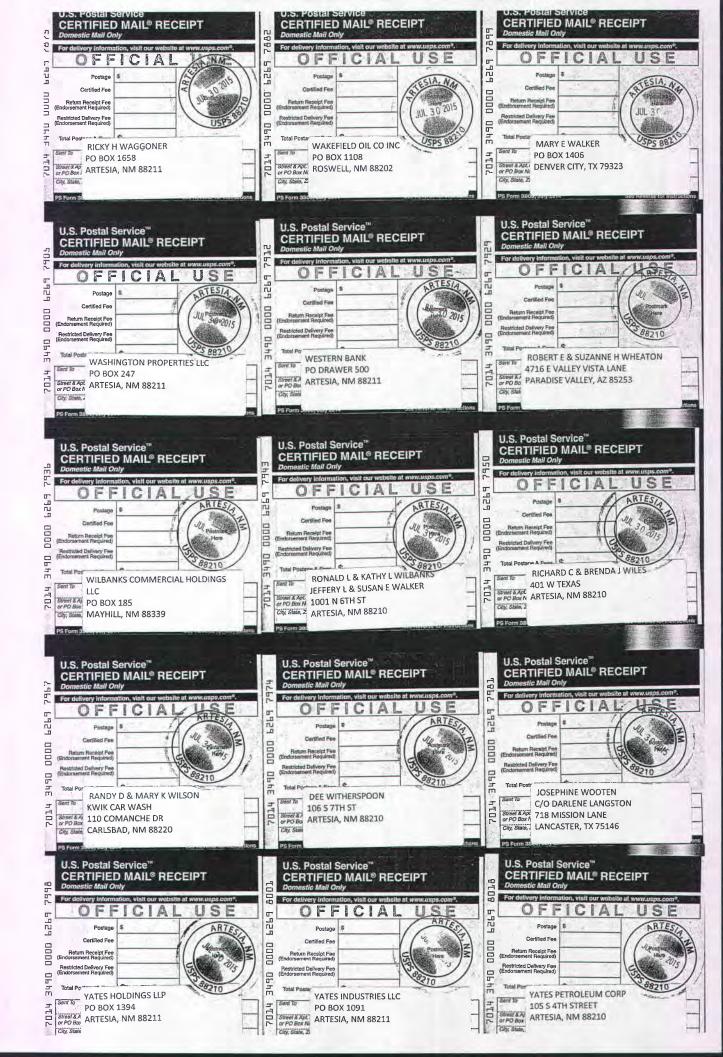


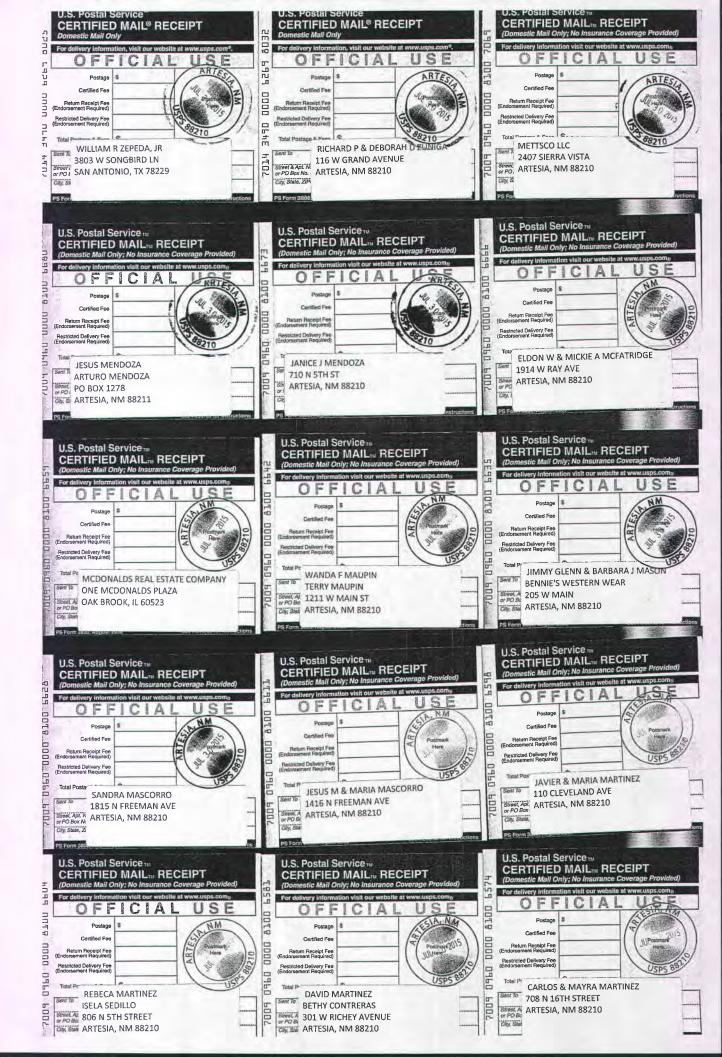


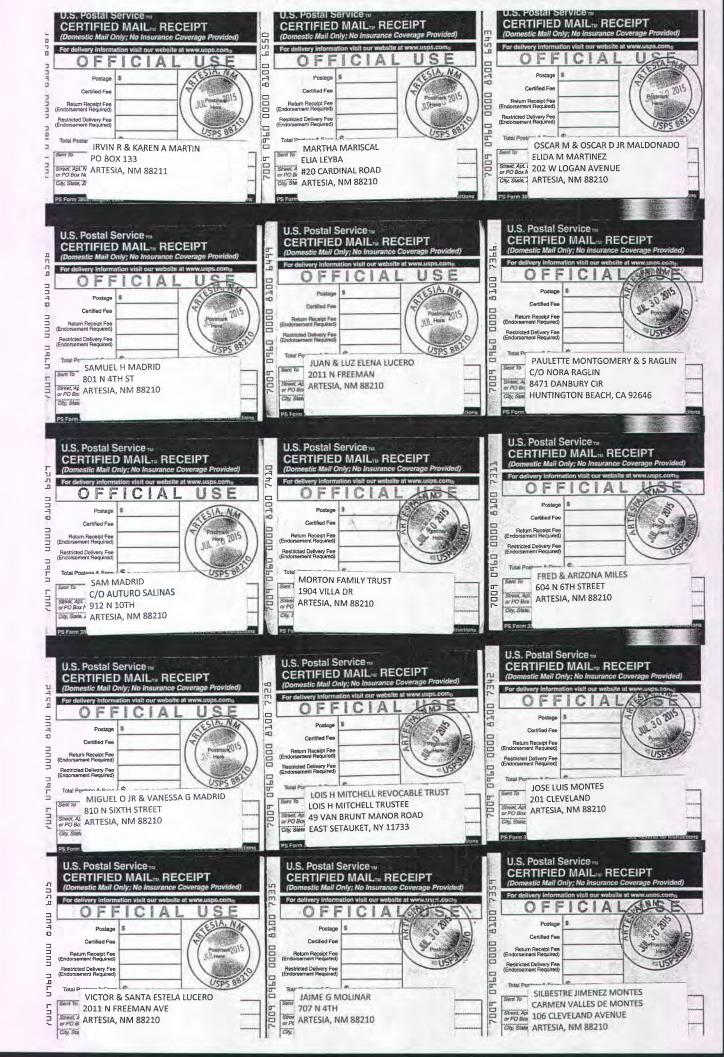
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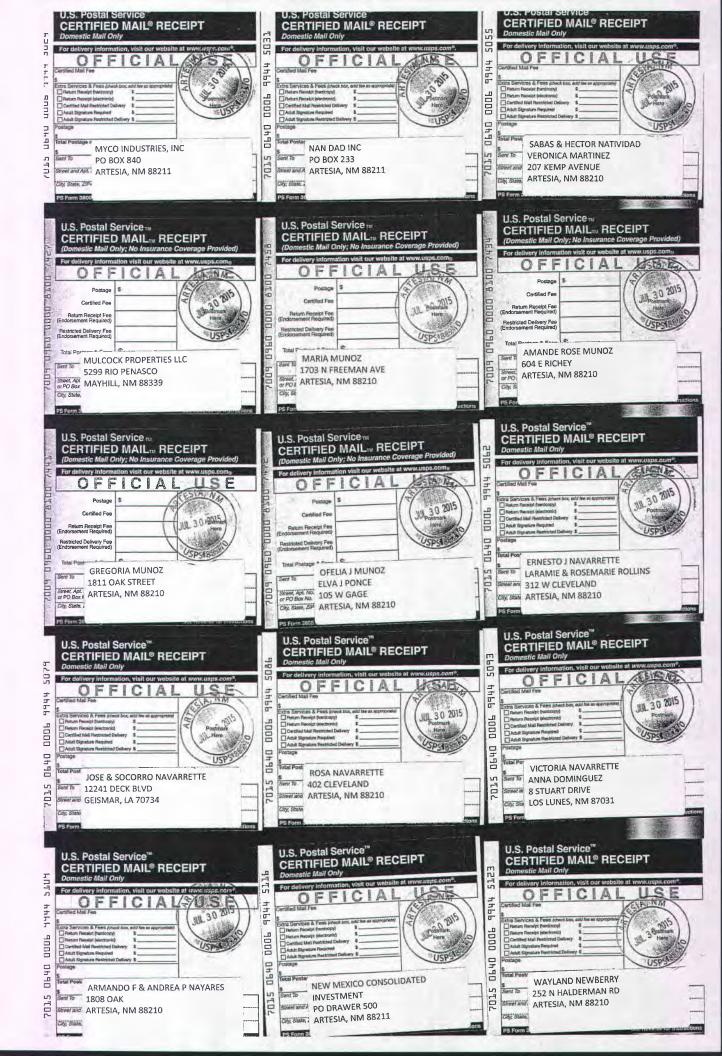
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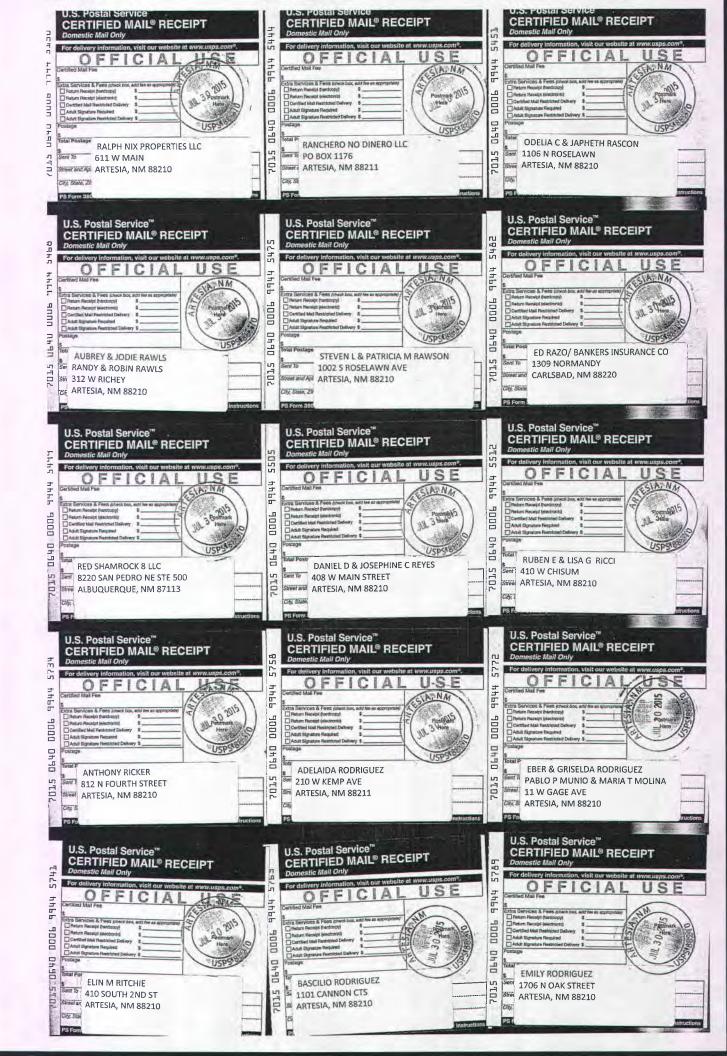
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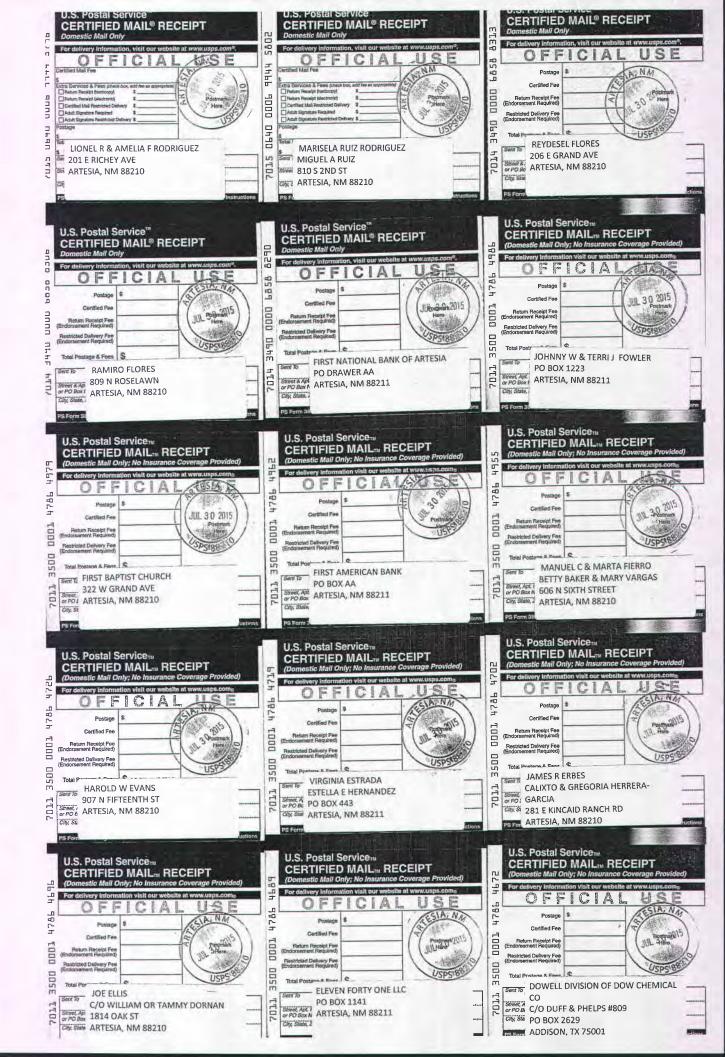


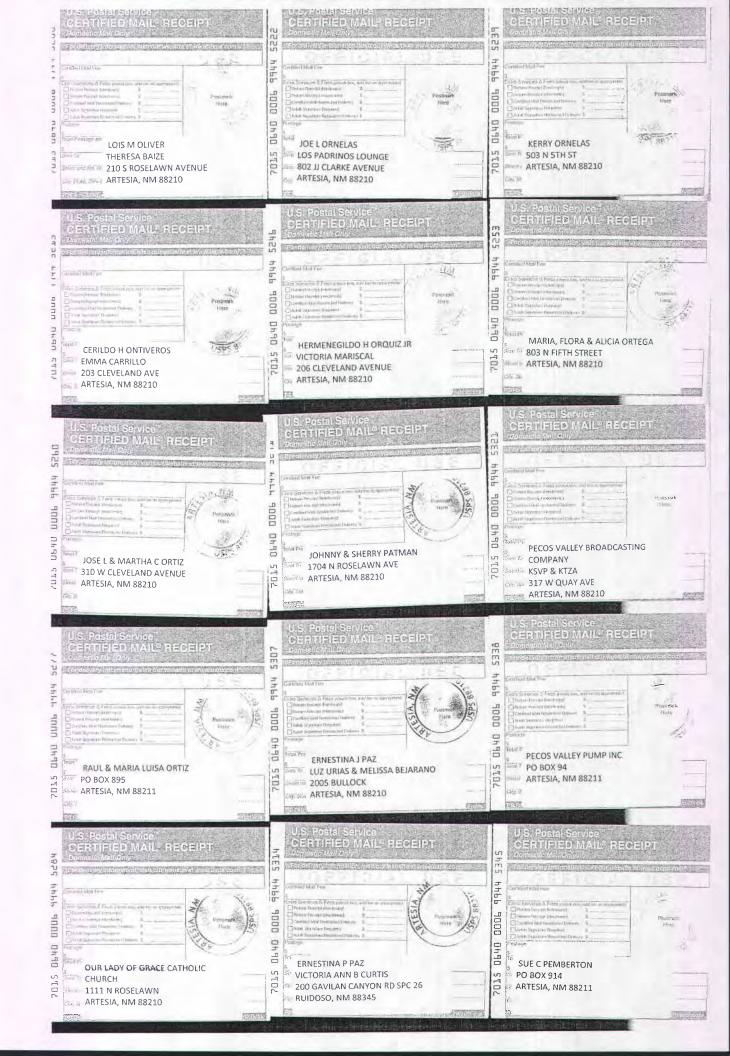


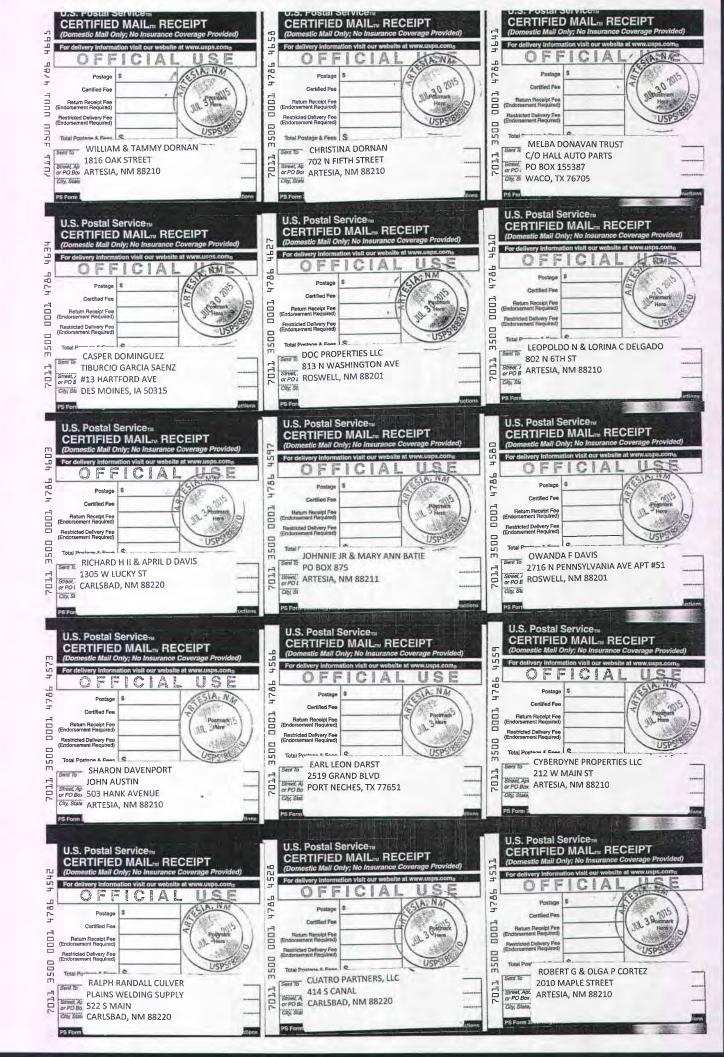


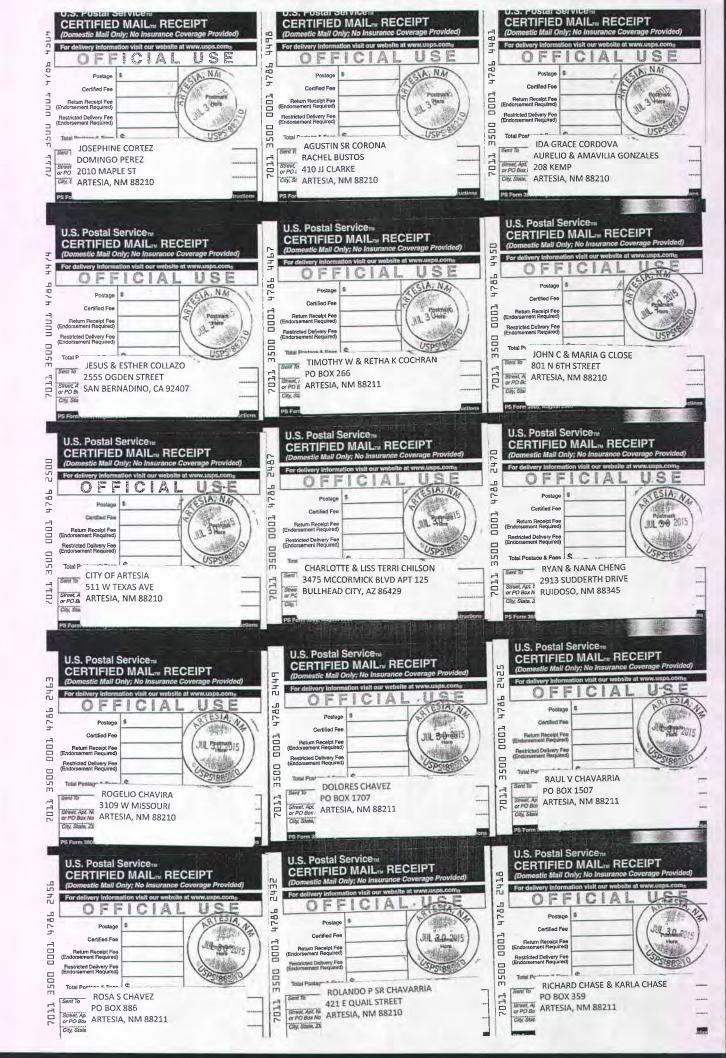


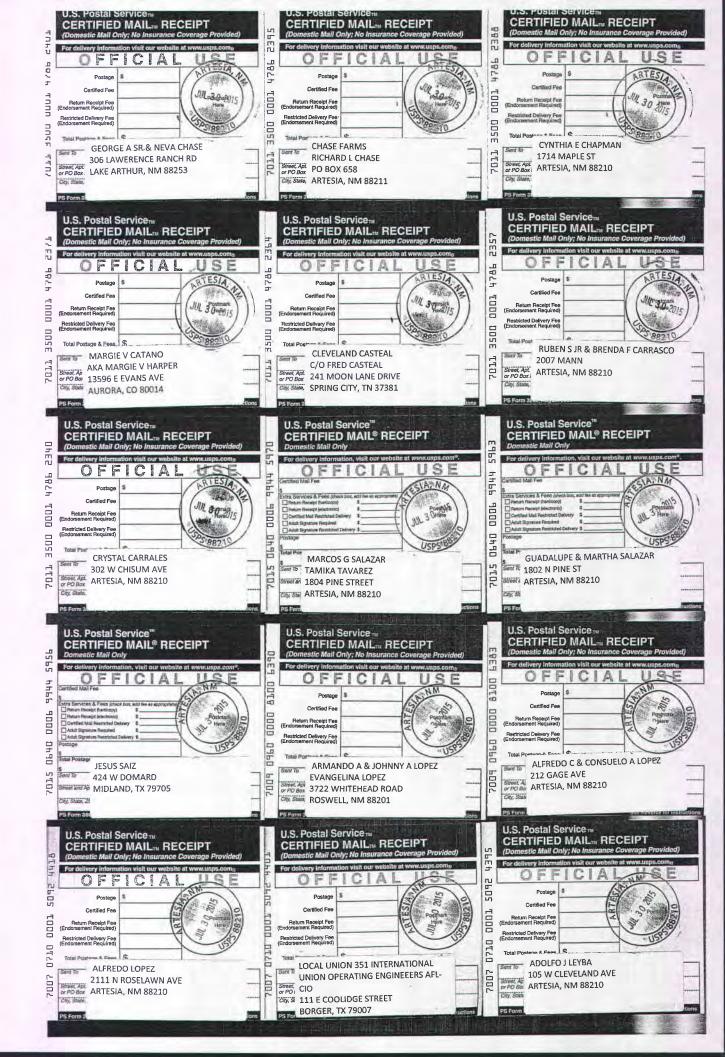


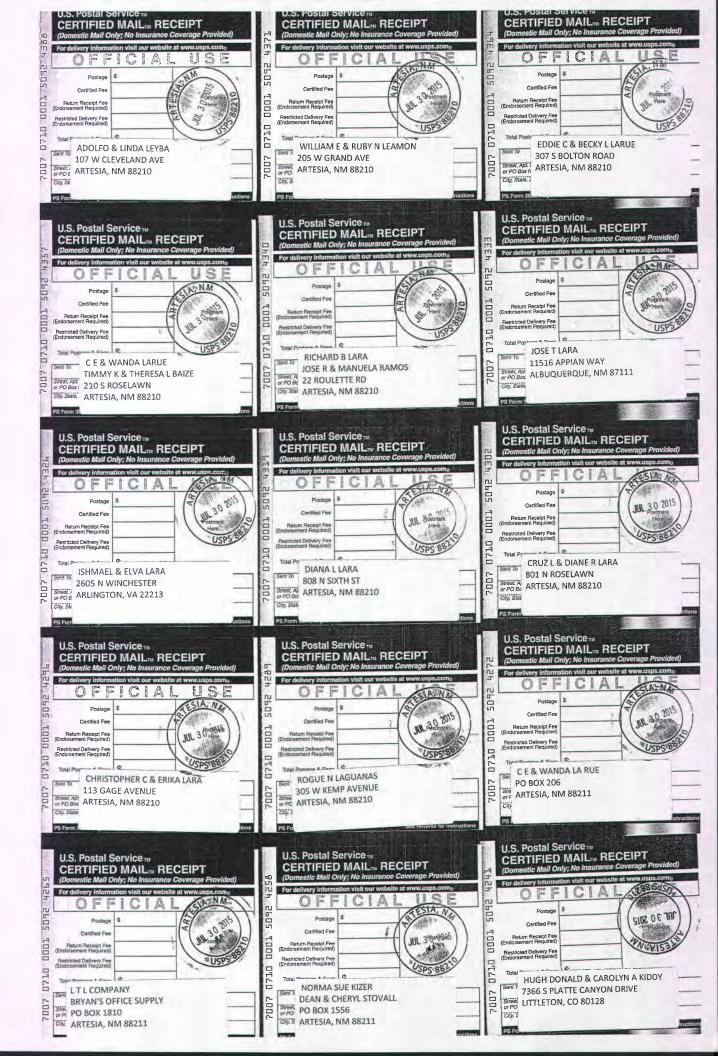


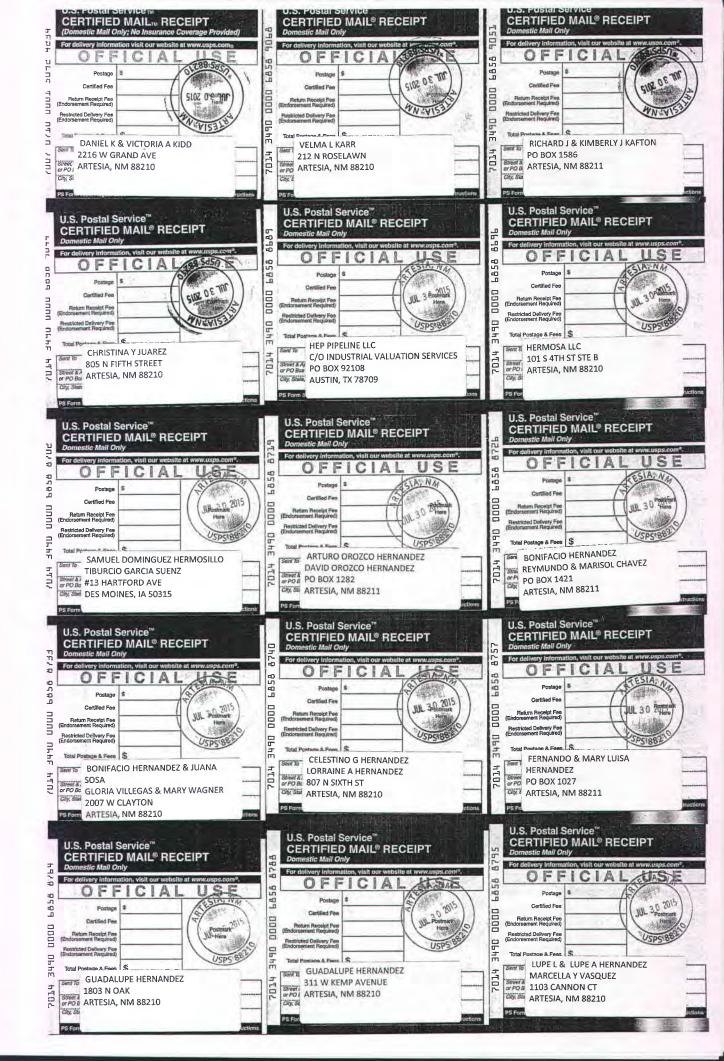


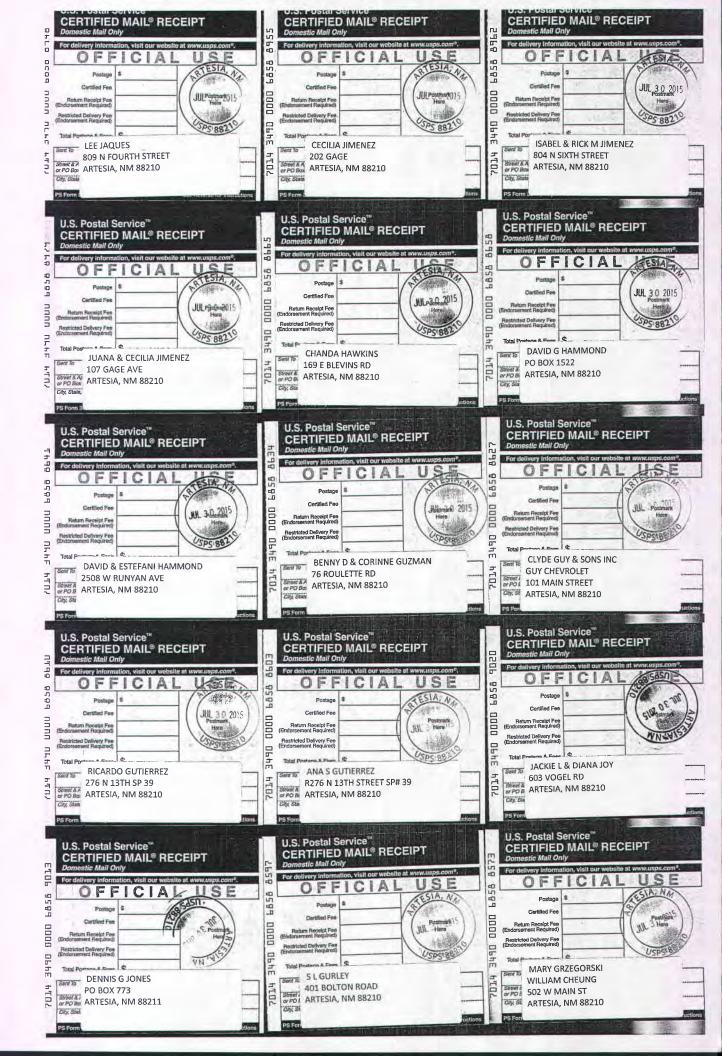




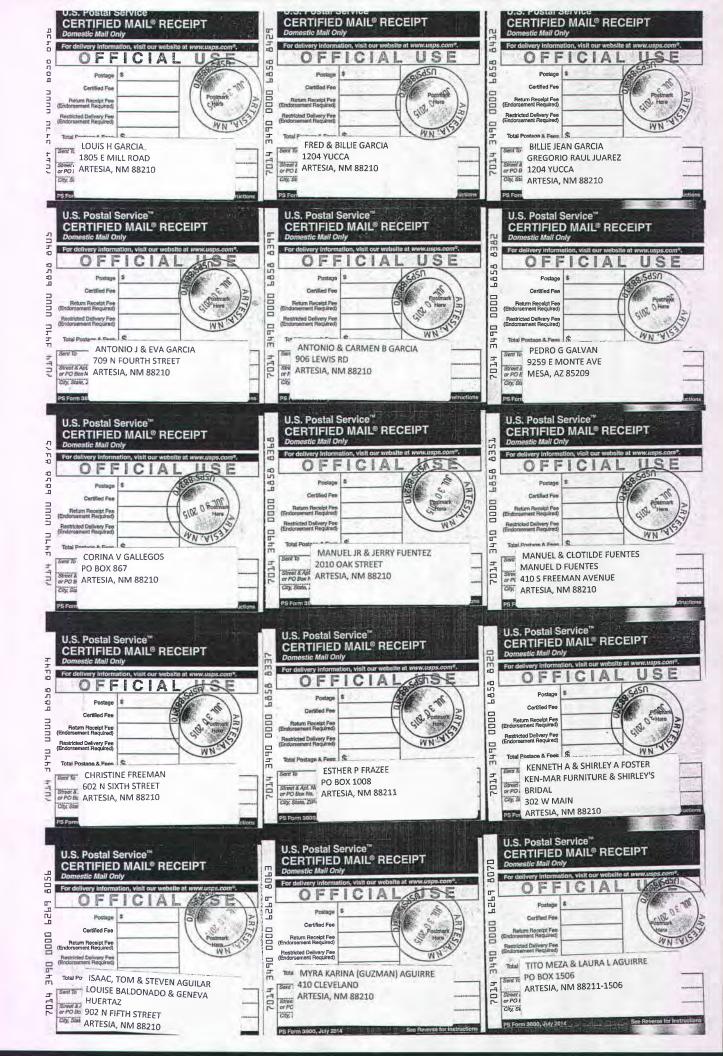


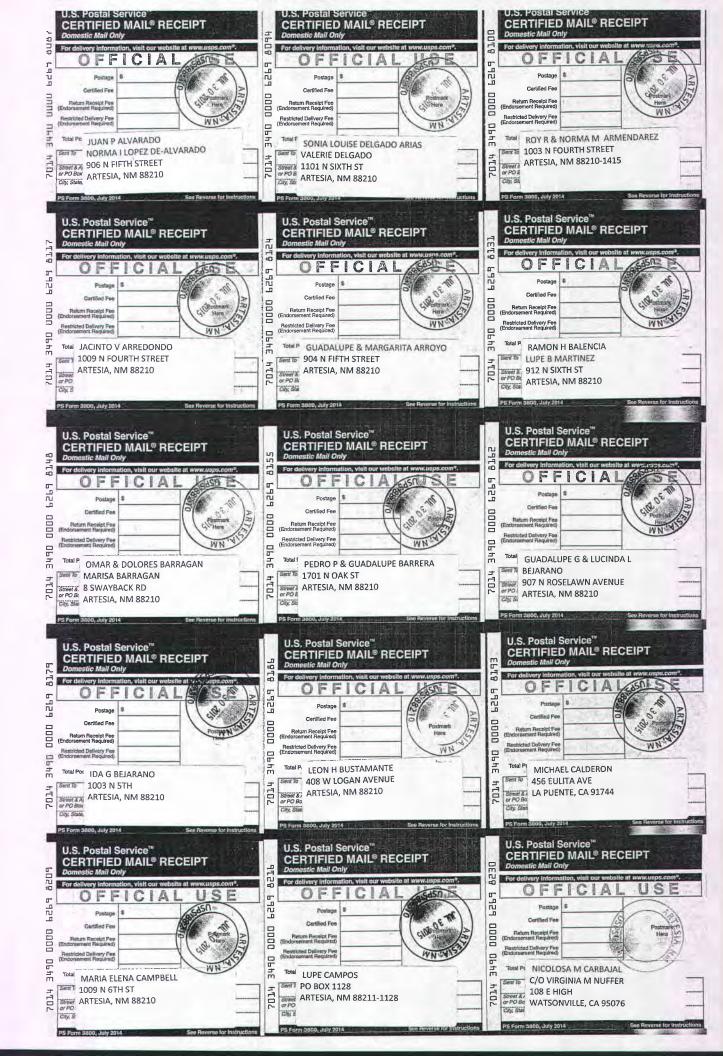


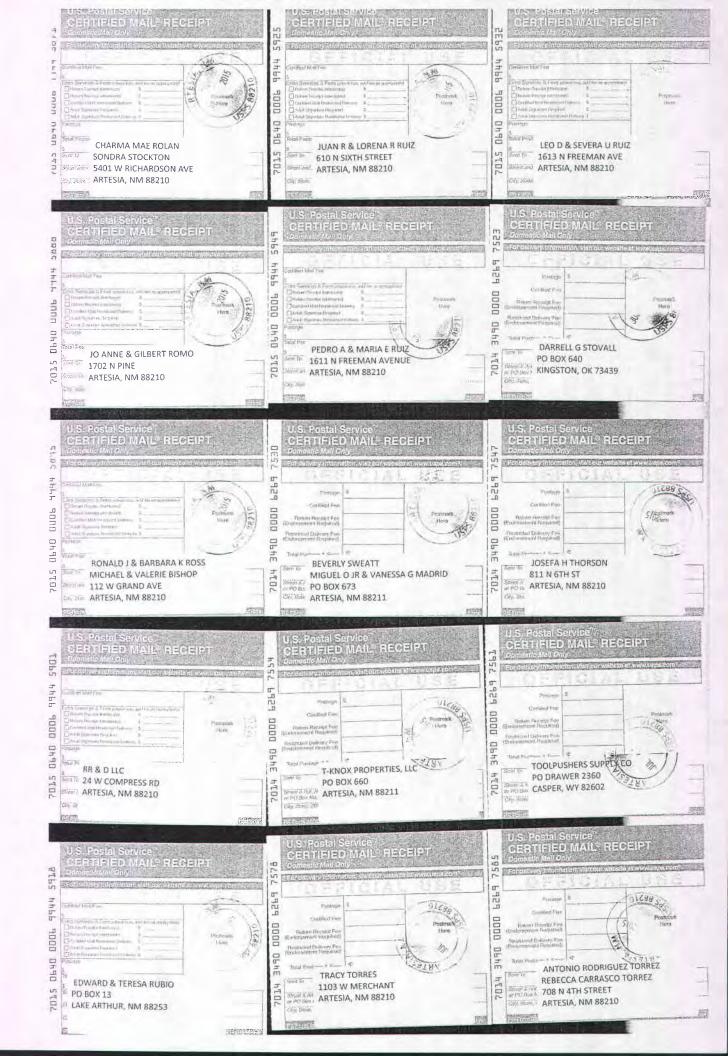


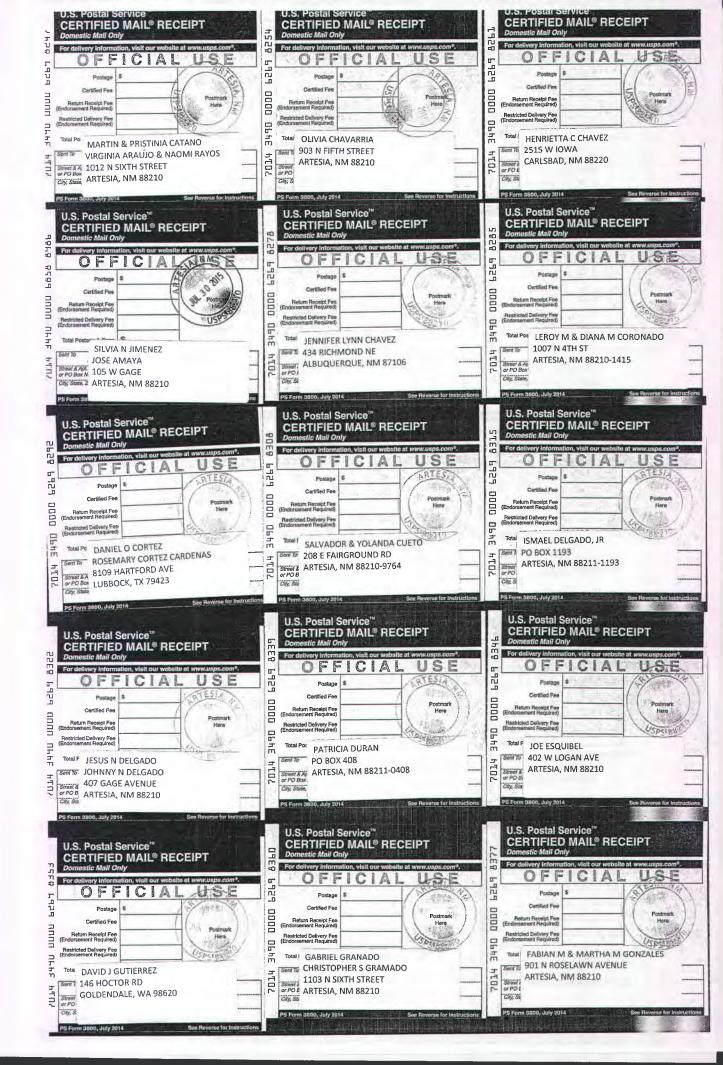


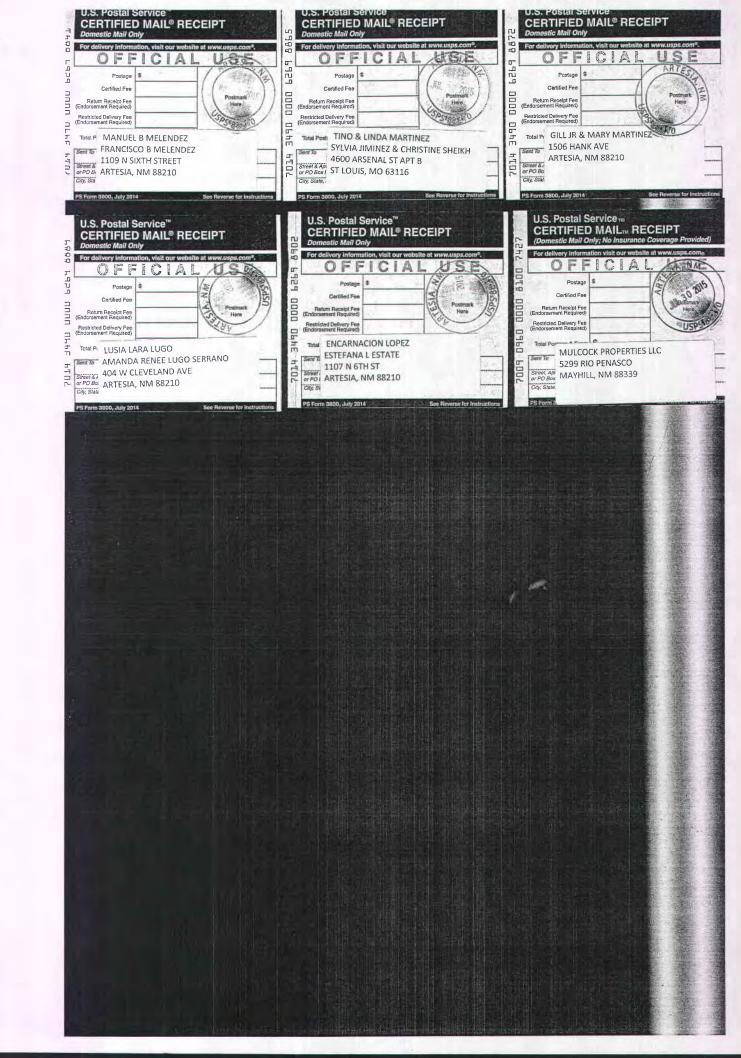
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# Attachment 3

Affidavi	t of Publication
	No.
State of New Mexico	0
County of Eddy:	
Danny Scott	Non Acat
being duly s sworn says	es that she is the Publisher
of the Artesia Daily Pre	ess, a daily newspaper of General
circulation, published in	n English at Artesia, said county
and state, and that the h	nereto attached
Disp	olay Ad
was published in a reg	ular and entire issue of the said
Artesia Daily Press, a d	laily newspaper duly qualified
for that purpose within	the meaning of Chapter 167 of
the 1937 Session Laws	s of the state of New Mexico for
1 Consecutiv	ve weeks/day on the same
day as follows:	
First Publication	July 22, 2015
Second Publication	
Third Publication	
Fourth Publication	
Fifth Publication	
Sixth Publication	
Subscribed and sworn l	before me this
22nd day of	July 2015
Latish NOTAR	CIAL SEAL Ba Romine RY PUBLIC-STATE OF NEW MEXICO Immission expires: 5/12/2009
Katus	ho Romine
Latisha R	omine
Notary Pu	ublic, Eddy County, New Mexico

**Copy of Publication:** 

#### NOTICE OF PERMIT MODIFICATION REQUEST

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The Refinery is located at 501 East Main, Artesia, NM, 88210 in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County. The discharge, increased in volume, will continue to be applied to the surface of an open space within the Refinery boundaries, which is located on the northern part of the Refinery east of

US-285 and south of East Richey Avenue. The northern discharge point is located 1255 feet south of East Richey Avenue and 1569 feet east of US-285. The southern discharge point is I ocated 2532 feet south of East Richey Avenue and 2208 feet east of US-285.

Comments, questions, and requests for a copy of the application (either a paper copy or an electronic copy via the internet) should be sent to the following OCD contact:

#### Mr. Carl Chavez

Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons wishing to receive future notices.

Affidavit of Publication		
No.		
State of New Mexico		
County of Eddy:		
Danny Scott Namy Lear		
being duly s sworn sayes that she is the <b>Publisher</b>		
of the Artesia Daily Press, a daily newspaper of General		
circulation, published in English at Artesia, said county		
and state, and that the hereto attached		
Display Ad		
was published in a regular and entire issue of the said		
Artesia Daily Press, a daily newspaper duly qualified		
for that purpose within the meaning of Chapter 167 of		
the 1937 Session Laws of the state of New Mexico for		
1 Consecutive weeks/day on the same		
day as follows:		
First Publication July 22, 2015		
Second Publication		
Third Publication		
Fourth Publication		
Fifth Publication		
Sixth Publication		
Subscribed and sworn before me this		
22nd day of July 2015		
OFFICIAL SEAL Latisha Romine		
NOTARY PUBLIC-STATE OF NEW MEXICO.		
My commission expires: 211 21 201		
0		
Katata Romi.		
Latisha Romine		

Notary Public, Eddy County, New Mexico

# **Copy of Publication:**

### AVISO DE SOLICITUD DE MODIFICACIÓN DEL PERMISO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

El día 22 de Mayo de 2015, la Refinería Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico (NM) (la Refinería), solicitó a la División de Conservación de Petróleo (Oil Conservation Division) (OCD) del Departamento the Energía, Minerales y Recursos Naturales de Nuevo México (New Mexico Energy, Minerals & Natural Resources Department) una modificación del Permiso de Descarga de Água Subterránea (Formulario GW-028). La modificación abarca la adición una unidad de ósmosis inversa (OI) temporaria en la Refinería para tratar agua utilitaria, como así también un aumento en la cantidad autorizada de agua de rechazo de la OI a ser aplicada al campo como parte de las descarga permitida. Conforme al Código Administrativo de Nuevo México (NMAC) 20.6.2.3108 B, la Refinería publica el presente aviso de solicitud de modificación del permiso a todas las personas en la lista de contactos de la Refinería. Este aviso incluye la información requerida por NMAC Sección 20.6.2.3108F.

La Refinería opera dos unidades OI permanentes para tratar aguas no tratadas para uso en calderas o en torres de enfriamiento en el proceso de la Refinería. Una unidad OI adicional ha sido instalada para servir como unidad de respaldo para las unidades OI permanentes durante la desactivación para mantenimiento,

y para suplementar la capacidad de las unidades OI permanentes que operan en la instalación. Debido al aumento de capacidad de procesamiento de la Refinería y la correspondiente demanda de agua tratada

para calderas y torres de enfriamiento, el uso de la unidad Ol temporaria ha incrementado.

El proceso de tratamiento de agua produce fluidos de rechazo autorizados en el Permiso de Descarga, los cuales serán depositados dentro de la propiedad de la Refinería en una cantidad diaria máxima de 10.000 barriles por día (bbl/día). Navajo solicita que el límite de descarga en el Permiso de Descarga GW-028 sea aumentado a 20.000 bbl/día (calculado a la media móvil de 12 meses) debido al aumento de la capacidad refinera y al correspondiente aumento operacional de calderas y torres de enfriamiento. Conforme al permiso de descarga GW-028, la aplicación del agua de rechazo al campo ha de finalizar el 21 de Octubre de 2016, o con anterioridad esa fecha.

El agua subterránea potencialmente afectada por la descarga se encuentra a una profundidad aproximada de 25 pies (7,6 metros) bajo la superficie de terreno, con una concentración total aproximada de sólidos disueltos (total dissolved solids) de 2.500 miligramos por litro (mg/L). No se anticipa que el aumento del volumen de descarga solicitado produzca ningún impacto negativo en la calidad existente del agua subterránea. Sobre la base del análisis de los fluidos de OI realizados hasta la fecha, componentes tales como cloruro, fluoruro, sulfato y cantidad total de sólidos disueltos merecen atención.

La Refinería está ubicada en 501 East Main, Artesia, NM, 88210 en SE/4 de la Sección 1, E/2 de la Sección 8, W/2 de la Sección 9, N/2 de la Sección 12, poblado 17 sur, Rango 26 este, NMPM, condado de Eddy. La descarga, de mayor volumen continuará siendo aplicada a una superficie abierta dentro de los límites de la propiedad de la Refinería, la cual está ubicada en la parte norte de la Refinería, al este de la carretera US-285, y sur de la Avenida East Richey. El punto norte de descarga está ubicado a 1255 pies al sur de la avenida East Richey y a 1569 pies al este de la autopista US-285. El punto sur de descarga está a 2532 pies al sur de la avenida East Richey y a 2208 pies al este de la autopista US-285.

Comentarios, preguntas, y petición de una copia de la presente solicitud (en papel o electrónica, vía in internet), pueden ser enviados al siguiente contacto de la OCD:

#### Mr. Carl Chavez

Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

La OCD aceptará comentarios y declaraciones de interés con respecto a esta solicitud y creará una lista de contactos específica para todas personas que deseen recibir avisos en el futuro.

## Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Tuesday, September 08, 2015 9:35 AM
То:	'Denton, Scott'; Brancard, Bill, EMNRD; Griswold, Jim, EMNRD
Cc:	Marks, Allison, EMNRD; McWatters, Denise; O'Brien, Robert (Bob) K.; Holder, Mike;
	Coons, Christina (Christie)
Subject:	Navajo Refining Company (GW-028) RO Reject Water Modification Application Public Notice Submittal

Mr. Denton:

The New Mexico Oil Conservation Division (OCD) has completed its review of Navajo Refining Company's letter dated September 3, 2015 with attached Public Notice submittals and finds that it satisfies Water Quality Control Commission Regulations, i.e., 20.6.2.3108 NMAC.

OCD is also in receipt of the requested technical information or report needed to complete its technical review of the above subject modification application. OCD is reviewing the technical information and anticipates issuance of a final determination and public notice in early October of 2015.

Please contact me If you have questions. Thank you.

From: Denton, Scott [mailto:Scott.Denton@HollyFrontier.com]

Sent: Wednesday, August 26, 2015 10:04 AM

**To:** Brancard, Bill, EMNRD <bill.brancard@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Chavez, Carl J, EMNRD <Carl J.Chavez@state.nm.us>

Cc: Marks, Allison, EMNRD <AllisonR.Marks@state.nm.us>; McWatters, Denise

<Denise.McWatters@HollyFrontier.com>; O'Brien, Robert (Bob) K. <Robert.O'Brien@HollyFrontier.com>; Holder, Mike <Michael.Holder@hollyfrontier.com>; Coons, Christina (Christie) <Christina.Coons@HollyFrontier.com>; Denton, Scott <Scott.Denton@HollyFrontier.com>

Subject: RE: ACO Monthly Report for July 2015

Bill,

Thanks for the e-mail and the reminder for submitting the Public Notice (PN) proof. For PN we have done the following:

- Notified landowners within 1/3 mile July 30<sup>th</sup>
- Posted PN in the Artesia newspaper July 22<sup>nd</sup>
- Posted signs at the Main Office entrance and near the NW corner of the north RO field on July 29<sup>th</sup>.

The PN for the signs is a 30-day posting period. This sets the end of the complete PN period on August 28<sup>th</sup>. We plan to submit the affidavits next week.

Regards,

SMD

Scott M. Denton

# Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Wednesday, June 03, 2015 4:14 PM
То:	'Denton, Scott'; Griswold, Jim, EMNRD
Cc:	Marks, Allison, EMNRD; Brancard, Bill, EMNRD; McWatters, Denise; O'Brien, Robert
	(Bob) K.; Holder, Mike
Subject:	Application for Modification of Discharge Permit GW-28 to Increase the Reverse
	Osmosis Reject Water Discharge Volume, dated May 22, 2015
Attachments:	Attachment 1 Public Notice RO Fields 6-2-2015.pdf

Mr. Denton:

The Oil Conservation Division (OCD) has received Navajo Refining Company L.L.C.'s (operator) application for modification of the discharge permit and initial fee, dated May 22, 2015 for the Artesia Refinery located in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9. N/2 of Section 12, Township 17 South. Range 26 East. NMPM, Eddy County, New Mexico.

The department has determined based on 20.6.2.3108 NMAC that the modification application is **not administratively complete**. The operator is encouraged to contact OCD to discuss Item 2 below.

The OCD has identified the following deficiencies:

- 1) Lack of the proposed locations and newspaper for providing notice [20.6.2.3108(A) NMAC].
- 2) Incomplete proposed public notice (see Attachment 1 Public Notice) per 20.6.2.3108(F) NMAC as follows:
  - a. Add zip code to the name and address of the proposed discharger [20.6.2.3108(F)(1) NMAC].
  - b. Add more specific discharge locations [20.6.2.3108(F)(2) NMAC], i.e., Unit Letter, Section, Township, and Range with more descriptive footages from major intersections to the two farm fields north and south of Eagle Creek.
  - c. Add description of the activities relative to the actual permit situation [20.6.2.3108(F)(3) NMAC], i.e., the RO Reject water discharges to farm fields are scheduled to terminate on or before October 21, 2016, etc.
  - d. Describe the expected reverse osmosis reject effluent quality from the two permanent units and the third temporary unit with sufficient information regarding discharge quality [20.6.2.3108(F)(4) NMAC], i.e. list constituents of concern, i.e., Chloride, Fluoride, Sulfate and Total Dissolved Solids, based on water quality exceedances to date.
  - e. Include language for requests for a copy or Web link of the application associated with OCD's contact information for questions [20.6.2.3108(F)(6) NMAC].

This section should not be misinterpreted to be required for OCD's Administrative Completeness review above; however, OCD is currently conducting a technical review of the application to expedite OCD's determination on the application and requests perhaps as "Attachment 5" of the application the following technical information:

1) A complete evaluation of RO Reject Water Quality, since the discharge was initiated.

- 2) A complete historical (> 25 years) evaluation with calculations of the estimated loading (tons) to the two 40-acre farm field areas or discharge areas based on historical (> 25 years) RO Reject Water Quality data, i.e., General Chemistry (Cl, F, SO<sub>4</sub>, NO<sub>3</sub>, and TDS) and Metals.
- 3) A contaminant hydrogeologic model of the two farm fields and the leachate discharge to groundwater beneath the two discharge locations based on 25 ft. of unsaturated zone (as a function of the actual sedimentation or lithologic units present beneath the two areas) with groundwater present at the same depth.
- 4) A statistical evaluation of max./min./avg., all exceedances of water quality standards, etc. leachate discharge levels in groundwater beneath each farm field.

Upon receipt of the administrative completeness information or deficiencies requested above, OCD may deem the application administratively complete and provide public notice pursuant to the WQCC notice requirements of 20.6.2.3108 NMAC to determine if there is any public interest.

Please contact me at (505) 476-3490 or <u>carlj.chavez@state.nm.us</u> if you have questions. Thank you for your cooperation in this matter.

Respectfully,

### Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division, Environmental Bureau 1220 South St. Francis Drive, Santa Fe, New Mexico 87505 O: (505) 476-3490 E-mail: <u>CarlJ.Chavez@State.NM.US</u> Web: <u>http://www.emnrd.state.nm.us/ocd/</u> **"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?"** To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental



From: Denton, Scott [mailto:Scott.Denton@HollyFrontier.com]
Sent: Friday, May 22, 2015 4:54 PM
To: Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD
Cc: Marks, Allison, EMNRD; Brancard, Bill, EMNRD; McWatters, Denise; O'Brien, Robert (Bob) K.; Holder, Mike; Denton, Scott
Subject: GW-028 Permit Modification Submittal

Jim & Carl,

Attached it the permit modification for GW-028 and a copy of the filing fee that was mailed today.

Let me know if you have any questions.

Thanks,

SMD

Scott M. Denton Environmental Manager

The HollyFrontier Companies P.O. Box 159 Artesia, NM 88211-0159 575-746-5487

Scott.Denton@HollyFrontier.com

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement. Attachment 1 Public Notice

#### NOTICE OF PERMIT MODIFICATION REQUEST

On May 22, 2015, the Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico, Refinery (the Refinery), applied to the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD) for a modification of Groundwater Discharge Permit (GW-028). The modification includes the addition of a temporary reverse osmosis (RO) unit at the Refinery to treat water for utility use and an increase in the amount of RO reject water authorized for land application in the permitted discharge. As specified in 20.6.2.3108B New Mexico Administrative Code (NMAC), the Refinery is providing this notice of permit modification request to all persons on the facility mailing list. This notice includes the information required by 20.6.2.3108F NMAC.

The Refinery operates two permanent RO units to treat raw water for use as boiler feed water or cooling tower makeup water in the Refinery process. An additional RO unit has been installed to serve as a back-up unit for the existing permanent RO units in the event of a maintenance shutdown and to supplement the capacity of the two existing permanent RO units operating at the facility. Due to the increased processing capacity of the Refinery and the corresponding demand for boiler feed water and cooling tower makeup water, use of the temporary RO unit has increased over time.

The water treatment process produces reject fluids that are authorized in the Discharge Permit to be applied within the Refinery's property at a daily maximum of approximately 10,000 bbl/day. Navajo is requesting that the discharge limit in Discharge Permit GW-028 be increased to approximately 20,000 bbl/day (calculated on a 12-month rolling average basis) due to increased refining capacity and the need for a corresponding increase in boiler and cooling tower operations. No change to the discharge water quality is expected.

Ground water that may be affected by the discharge occurs at a depth of approximately 25 feet below ground surface with a total dissolved solids concentration of approximately 2,500 mg/L. The requested increased discharge volume is not expected to adversely impact existing groundwater quality.

The Refinery is located at 501 East Main, Artesia, NM. The discharge, increased in volume, will continue to be applied to the surface of an open space within the Refinery boundaries, which is located on the northern part of the Refinery east of US-285 and south of East Richey Avenue.

Comments or questions should be sent to the following OCD contact:

Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons wishing to receive future notices.

# Chavez, Carl J, EMNRD

From:	Denton, Scott <scott.denton@hollyfrontier.com></scott.denton@hollyfrontier.com>
Sent:	Friday, May 22, 2015 4:54 PM
То:	Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD
Cc:	Marks, Allison, EMNRD; Brancard, Bill, EMNRD; McWatters, Denise; O'Brien, Robert
	(Bob) K.; Holder, Mike; Denton, Scott
Subject:	GW-028 Permit Modification Submittal
Attachments:	150522 GW-028 RO Volume Increase Permit Modification Submittal.pdf; 150522 Permit
	Mod Filing Fee Transmittal Letter.pdf

Jim & Carl,

Attached it the permit modification for GW-028 and a copy of the filing fee that was mailed today.

Let me know if you have any questions.

Thanks,

SMD

Scott M. Denton Environmental Manager

The HollyFrontier Companies P.O. Box 159 Artesia, NM 88211-0159 575-746-5487

Scott.Denton@HollyFrontier.com

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May 22, 2015

Director, Oil Conservation Division NM Energy, Minerals & Natural Resources Dept. 1220 S. St. Francis Drive Santa Fe, NM 87505

Certified Mail/Return Receipt 7011 3500 0001 4786 4788

Re: Discharge Permit GW-028 - Permit Modification Filing Fee WQA-OCD-CO-2015-002 Application for Modification Navajo Refining Company, L.L.C. Artesia Refinery

Dear Director:

Enclosed please find a check in the amount of \$100 in payment of the permit filing fee pursuant to 20.6.2.3114 NMAC for the Permit Modification Application to GW-028. If you have any questions, please do not hesitate to contact me at (575) 746-5487.

Sincerely,

Scott M. Denton Environmental Manager

Enclosure

Electronic cc: OCD:

OCD: Bill Brancard, Allison Marks, Jim Griswold, Carl Chavez HFC Bob O'Brien, Mike Holder, Denise McWatters

Environmental File: OCD.RO Reject Flow Data.Permit Mod <u>150522 Permit Mod Filing Fee Transmittal Letter</u>

Service and the service of the servi	REINA BEAMLIRES SIEE BAGKS STORE STORE
0005334 11-24 Office AU # 1210(6) Remitter: SCOTT M DENTON Operator 1.D.: u303653	see a second sec
PAY TO THE ORDER OF ***WATER QUALITY MANAGEMENT FUND***	May 22, 2015 📲
***One hundred dollars and no cents***	**\$100.00**
Payae Address: Memo: NEW MEXICO ENERGY. MINERALS ANATURAL WELLS FARGO BANK, N.A. 610 W MAIN ST ARTESIA, NM 88210 FOR INQUIRIES CALL (480) 394-3122	VOID IF OVER US \$ 100.00

WELLS FARGO BANK, N.A. 610 W MAIN ST ARTESIA, NM 88210 FOR INQUIRIES CALL (480) 394-3122

VOID IF OVER US \$ 100.00 s Purchaser's Signature



May 22, 2015

Submitted electronically via email to jim.griswold@state.nm.us and carlj.chavez@state.nm.us

Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505

### RE: WQA-OCD-CO-2015-002 Application for Modification Discharge Permit GW-028 Navajo Refining Company, L.L.C.

Dear Sirs:

In accordance with Paragraph 1 of Exhibit A to Agreed Compliance Order No. WQA-OCD-CO-2015-002, dated April 27, 2015 (the Order), the Navajo Refining Company (Navajo), Artesia, New Mexico Refinery (the Refinery) hereby submits an application for modification to Discharge Permit GW-028 (Discharge Permit). This letter and all attachments provided herein constitute the permit modification request required under the Order.

The scope of this modification request includes the following three elements, which are further addressed and explained below, with applicable supporting documentation attached:

- Increasing the total maximum volume of reverse osmosis (RO) reject fluids that can be applied to the surface of the Refinery's discharge fields (also referred to as "farms") from approximately 10,000 barrels per day (bbl/day) to approximately 20,000 bbl/day calculated on a rolling 12-month average. The current discharge limit is contained in Permit Condition 4.A, but is also referenced in Conditions 1.A., 1.B., and 6.C.
- Operating a temporary RO unit at the Refinery.
- Updating the Refinery processing capacity to 105,000 bbls/day.

It is Navajo's understanding that the addition of the temporary RO unit and the requested revision to the discharge volume limit will require public notice. A copy of public notice of this permit modification request with respect to these two changes is found at Attachment 1, including the information required by 20.6.2.3108F New Mexico Administrative Code (NMAC).

In accordance with 20.6.2.3114.F NMAC, Navajo has submitted the applicable permit modification filing fee (\$100) and understands that a permit fee will be assessed upon approval of the permit modification request.

### Modification Request – Increase the Permitted Volume of RO Reject Fluid Discharges

Condition 4.A of the Discharge Permit currently authorizes Navajo to discharge approximately 10,000 barrels per day (bbl/day) of RO reject fluids from two permanent RO units to the discharge fields (also referred to as "farms"). Navajo is hereby requesting to modify the Discharge Permit to authorize Navajo to discharge 20,000 bbl/day, calculated on a 12-month rolling average based on daily volume measurements from the prior 12 months, consistent with Navajo's current use of the Refinery (including operation of a temporary RO unit), and intended future use of the Refinery until such time as land application can cease. The remaining provisions of the Discharge Permit will remain unchanged.

Accordingly, Navajo requests that the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD) approve the following modifications to Conditions 1.A., 1.B., 4.A., and 6.C. of the Discharge Permit (Note that the Permit language below is repeated verbatim from the Discharge Permit with the exception of the requested modifications. Requested modifications are noted in boldface type.):

**1.A. Permittee and Permitted Facility, paragraph 2:** The Permittee refines crude oil and processes natural gas at its Facility. The Facility refines and processes up to **105,000** barrels per day of crude oil and other feed stocks. The Permittee's Facility discharges approximately **20,000** barrels per day of reverse osmosis reject fluids to the surface at the Facility's two farms. The Permittee is abating groundwater and vadose zone contamination at the Facility. Groundwater that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 25 feet below ground surface with a total dissolved solids concentration of approximately 2,500 mg/L.

**1.B.** Scope of Permit, paragraph 3: This Discharge Permit authorizes the Permittee to discharge approximately 20,000 barrels per day of reverse osmosis reject fluids at the Permittee's two farms, as calculated on a 12-month rolling average basis. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil field waste including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, filters, elemental sulfur, washdown water, contaminated soil, and cooling tower blowdown water.

**4.A. Discharge Volume:** The Permittee is authorized to discharge approximately **20,000** barrels per day of reverse osmosis reject fluids to the surface at the Permittee's two farms, as **calculated on a 12-month rolling average basis**. Discharge to Eagle Draw is prohibited. This authorization will expire not later than October 21, 2016 or when the proposed new Class I injection well is operationally capable of accepting the waste stream, whichever occurs first.

6.C. Requirement to Cease All Discharge of Reverse Osmosis Reject Fluids to the Surface at the Two Farms. The Permittee shall cease all discharges of reverse osmosis

reject fluids (approximately **20,000** barrels per day **as calculated on a 12-month rolling average basis**) and/or any other waste discharge to the surface on or before October 21, 2016 or when the proposed new Class I injection well is operationally capable of accepting the waste stream, whichever occurs first.

The following text provides information on the proposed increase in the RO reject fluid discharge volume with respect to each administrative completeness item required by 20.6.2.3108A NMAC, found at 20.6.2.3108F (1)-(5) NMAC.

### 20.6.2.3108F (1) Name and Address of the Proposed Discharger:

Navajo Refining Company, L.L.C. 501 East Main, Artesia, NM 88210

#### 20.6.2.3108F (2) Location of the Discharge:

Attachment 2 is a map that depicts the location of the Refinery's discharge fields/farms for the proposed maximum volume of RO reject fluids of approximately 20,000 bbl/day as calculated on a 12-month rolling average basis. The map also depicts the discharge point for the temporary RO unit, which is the same outfall as that used for discharges from the permanent RO unit at the South RO Reject field. The location of the two permanent RO units and the temporary RO unit are also depicted on Attachment 2.

### 20.6.2.3108F (3) Brief Description of the Activities that Produce the Discharge:

The Refinery operates two permanent RO units that generate reject fluids that are authorized in the Discharge Permit to be applied to the fields/farms at a daily maximum of approximately 10,000 bbl/day. In addition, the Refinery has installed a temporary RO unit that serves as a back-up unit for the existing permanent RO units in the event of a maintenance shutdown and to supplement the capacity of the two existing permanent RO units operating at the facility. Due to the increased processing capacity of the Refinery and the corresponding demand for boiler feed water and cooling tower makeup water, use of the temporary RO unit has increased over time.

A technical summary of the temporary RO unit and process, and a RO unit process diagram, are provided in Attachment 3. As explained further in Attachment 3, the units (permanent and temporary) function similarly in the pre-treatment of fresh groundwater, either purchased from the City of Artesia or produced from the Refinery's deep artesian wells, to be used as boiler feed water or cooling tower makeup water.

### 20.6.2.3108F (4) Brief Description of the Volume and Quality of the Discharge:

#### Basis of Volume Increase Request and Compliance Measurement Method

Each RO unit is designed to operate at 75% recovery with a total RO reject flowrate of 134 gpm, or nearly 5,000 bbl/day. With three RO units currently operating at the Refinery, Navajo projects that RO reject discharge volumes will consistently reach 15,000 bbl/day (three units generating 5,000 bbl/day each). In practice, however, achievable recovery percentages vary based upon the quality of the incoming water, system design, and other operational factors; therefore, Navajo is requesting a modification to the discharge volume limit to approximately 20,000 bbl/day as calculated on a 12-month rolling average basis to allow for these variations in achievable efficiency and associated discharge flowrates. The requested approximate 20,000 bbl/day discharge volume is consistent with Navajo's current use of the Refinery (including operation of the temporary RO unit).

The discharge volume will be measured on a daily basis. Discharge flow from the permanent units is metered and recorded by the Refinery's control system and historian. The temporary RO unit is a rental unit which is metered by the vendor who maintains the meter records and makes those records available to the Refinery. A Refinery operator will log the temporary RO unit's discharge volume data on a daily basis and submit the data to the Refinery's Environmental Department staff at the end of each week.

Data from the two permanent units and the temporary RO unit will be evaluated by the Environmental Department to ensure compliance with Condition 4.A. of the Discharge Permit. The average discharge volume shall be calculated on a 12-month rolling average based on daily volume measurements from the prior 12 months. Navajo will monitor and record discharge flowrate data on a daily basis for each RO unit individually and for all RO units together. Discharge volumes shall continue to be reported to the OCD in the Annual Discharge Permit Report in accordance with the requirements of Condition 2.F. of the Discharge Permit and as required by the Order.

### Quality of the Discharge and Compliance Monitoring

The quality of the additional volume of RO reject fluids (including operation of the temporary RO unit) is expected to be similar to the quality of the discharges from the two permanent RO units reported to OCD annually in the Annual Discharge Permit Report. The water source (i.e., the City of Artesia or the Refinery's deep artesian wells) is the same for the current permanent units and the temporary unit, and will be the same for any future permanent RO units. As RO unit design, operation, and influent for the permanent and temporary RO units is similar, it is reasonable to expect that the resulting discharge quality will also be similar.

Analytical data for samples of the temporary RO unit reject fluids collected on April 14, 2015 and April 28, 2015 confirm that these fluids are comparable in quality to the reject fluids from the permanent units. A copy of the analytical reports for the temporary RO unit reject stream and the permanent RO reject stream samples, are provided in Attachment 4.

Navajo proposes to collect and analyze grab samples of the temporary RO unit discharge (and record and report, and maintain records) in accordance with the quality monitoring requirements for the two

existing permanent RO units set forth in Condition 4.B. of the Discharge Permit. These samples will be collected during semi-annual groundwater monitoring sampling events.

The Discharge Permit's quality sampling and reporting requirements also apply to the increased discharge volume, and these requirements satisfy 20.6.2.3109C(2) NMAC (criteria for the OCD Secretary's decision on permits and permit modifications, including protection of groundwater and discharge monitoring systems).

# 20.6.2.3108F (5) Depth to and Total Dissolved Solids Concentration of the Ground Water Most Likely to be Affected by the Discharge:

The Discharge Permit (Condition 1.A.) identifies groundwater that may be affected by Refinery operations as occurring at a depth of approximately 25 feet below ground surface with a total dissolved solids (TDS) concentration of approximately 2,500 mg/L.

In general, lithologic logs from monitor wells installed in and near the Refinery process area document a shallow saturated zone overlying the main valley fill alluvium and containing water of variable quality in fractured caliche and sand and gravel lenses at depths of 15 to 30 feet below ground surface. The general direction of flow in this shallow saturated zone is to the east toward the Pecos River. The water in the shallow saturated zone is highly variable in quality, volume, areal extent, and saturated thickness. Concentrations of TDS exceeding 2,000 mg/L and sulfate exceeding 500 mg/L have been recorded northwest (upgradient) of the Refinery.

In accordance with Condition 6.D. of the Discharge Permit, Navajo has completed a site investigation of the discharge fields and submitted the *Reverse Osmosis Reject Water Discharge Fields Investigation Final Report* to the OCD in February 2014. The investigation indicated minor impacts to the geochemistry of the groundwater beneath the fields; however, it is inconclusive whether the RO reject discharge stream may potentially be contributing to elevated constituents of concern in groundwater, or if there may be upgradient sources of these compounds. Navajo has initiated a background study for the discharge fields and has proactively recommended continued groundwater monitoring of the six groundwater monitoring wells in the RO reject discharge field on a semiannual basis.

Quarterly sampling events conducted for the RO discharge field investigation reported in the February 2014 *Investigation Final Report* were completed during 2013, a time period during which the temporary RO unit was in operation and RO reject fluid discharges exceeded 10,000 bbl/day. Hence, neither continued operation of the temporary RO unit nor increased discharge rates are expected to adversely impact groundwater quality. Continued monitoring will be conducted in accordance with the Facility Wide Groundwater Monitoring Plan.

As stated in Section I.12 of the Agreed Compliance Order with the OCD, there are no known or anticipated damages to human health or the environment associated with the discharges discussed above. Discharges take place solely on Navajo property, and moreover, as also noted in the Order

and in the discussion above, Navajo's groundwater monitoring system has not confirmed any human health or environmental risks that may be attributed to the discharge of RO reject fluid above 10,000 bbl/day.

The results of the discharge field site investigation and temporary RO unit reject fluids analysis, and the continued monitoring of the RO reject discharge and groundwater, also address 20.6.2.3109C(1) NMAC (criteria for the OCD Secretary's decision on permits and permit modifications, including no impact on groundwater that has a TDS concentration of 10,000 mg/l or less).

### Conclusion

The above information and attachments constitute the permit modification request required by Exhibit A, Paragraph 1, to the Agreed Compliance Order. The permit modification request includes the information required for administrative completeness under 20.6.2.3108F (1)-(5) NMAC.

Navajo will complete all required sampling, analysis, and reporting for the permanent and temporary units under the requirements of the Discharge Permit. Based on the results of the recent discharge field site investigation and RO reject fluids sample analysis, land application of the requested additional volume of RO reject fluids is not expected to adversely impact groundwater at the discharge field location. Therefore, the permit modification request satisfies 20.6.2.3109C(2) NMAC (criteria for the OCD Secretary's decision on permits and permit modifications, including protection of groundwater and discharge monitoring systems) and 20.6.2.3109C(1) NMAC (criteria for the OCD Secretary's decision on permits and permit modifications, including that groundwater that has a TDS concentration of 10,000 mg/l or less will not be affected).

Navajo is committed to working cooperatively with OCD to help facilitate its review of this permit modification request. We appreciate the attention OCD has given to this matter and OCD's prompt consideration of this application. If you have any questions or comments, please do not hesitate to contact me at 575-746-5487.

Sincerely,

Scott M. Denton Environmental Manager

Enclosures:

Attachment 1: Public Notice Attachment 2: Reverse Osmosis Unit and Discharge Locations Attachment 3: Temporary Reverse Osmosis Unit Technical Summary Attachment 4: Temporary Reverse Osmosis Unit Reject Fluid Sample Analysis Data

HFC: D. McWatters, R. O'Brien, M. Holder OCD: A. Marks, B. Brancard

cc.

Attachment 1 Public Notice

### NOTICE OF PERMIT MODIFICATION REQUEST

On May 22, 2015, the Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico, Refinery (the Refinery), applied to the New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division (OCD) for a modification of Groundwater Discharge Permit (GW-028). The modification includes the addition of a temporary reverse osmosis (RO) unit at the Refinery to treat water for utility use and an increase in the amount of RO reject water authorized for land application in the permitted discharge. As specified in 20.6.2.3108B New Mexico Administrative Code (NMAC), the Refinery is providing this notice of permit modification request to all persons on the facility mailing list. This notice includes the information required by 20.6.2.3108F NMAC.

The Refinery operates two permanent RO units to treat raw water for use as boiler feed water or cooling tower makeup water in the Refinery process. An additional RO unit has been installed to serve as a back-up unit for the existing permanent RO units in the event of a maintenance shutdown and to supplement the capacity of the two existing permanent RO units operating at the facility. Due to the increased processing capacity of the Refinery and the corresponding demand for boiler feed water and cooling tower makeup water, use of the temporary RO unit has increased over time.

The water treatment process produces reject fluids that are authorized in the Discharge Permit to be applied within the Refinery's property at a daily maximum of approximately 10,000 bbl/day. Navajo is requesting that the discharge limit in Discharge Permit GW-028 be increased to approximately 20,000 bbl/day (calculated on a 12-month rolling average basis) due to increased refining capacity and the need for a corresponding increase in boiler and cooling tower operations. No change to the discharge water quality is expected.

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The Refinery is located at 501 East Main, Artesia, NM. The discharge, increased in volume, will continue to be applied to the surface of an open space within the Refinery boundaries, which is located on the northern part of the Refinery east of US-285 and south of East Richey Avenue.

Comments or questions should be sent to the following OCD contact:

Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

The OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons wishing to receive future notices.

### AVISO DE SOLICITUD DE MODIFICACIÓN DEL PERMISO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

El día 22 de Mayo de 2015, la Refinería Navajo Refining Company L.L.C. (Navajo), Artesia, New Mexico (NM) (la Refinería), ha solicitado a la División de Conservación de Petróleo (Oil Conservation Division) (OCD) del Departamento the Energía, Minerales y Recursos Naturales de Nuevo México (New Mexico Energy, Minerals & Natural Resources Department) una modificación del Permiso de Descarga de Agua Subterránea (Formulario GW-028). La modificación abarca la adición una unidad de ósmosis inversa (OI) temporaria en la Refinería para tratar agua utilitaria y un aumento en la cantidad de agua de rechazo de la OI autorizada para aplicación al campo como parte de las descarga permitida. Conforme al Código Administrativo de Nuevo México (NMAC) 20.6.2.3108 B, la Refinería publica el presente aviso de solicitud de modificación del permiso a todas las personas en la lista de contactos de la Refinería. Este aviso incluye la información requerida por NMAC Sección 20.6.2.3108F.

La Refinería opera dos unidades OI permanentes para tratar aguas no tratadas para uso en calderas o en torres de enfriamiento en el proceso de la Refinería. Una unidad OI adicional ha sido instalada para servir como unidad de respaldo para las unidades OI permanentes durante la desactivación para mantenimiento, y para suplementar la capacidad de las unidades OI permanentes que operan en la instalación. Debido al aumento de capacidad de procesamiento de la Refinería y la correspondiente demanda de agua tratada para calderas y torres de enfriamiento, el uso de la unidad OI temporaria ha incrementado.

El proceso de tratamiento de agua produce fluidos de rechazo autorizados en el Permiso de Descarga, los cuales serán depositados dentro de la propiedad de la Refinería en una cantidad diaria máxima de 10.000 barriles por día (bbl/día). Navajo solicita que el límite de descarga en el Permiso de Descarga GW-028 sea aumentado a 20.000 bbl/día (calculado a la media móvil de 12 meses) debido al aumento de la capacidad refinera y a la necesidad del correspondiente aumento operacional de calderas y torres de enfriamiento. No se anticipa ningún cambio a la calidad de agua de descargada.

El agua subterránea potencialmente afectada por la descarga se encuentra a una profundidad aproximada de 25 pies (7,6 metros) bajo la superficie de terreno, con una concentración total aproximada de sólidos disueltos (total dissolved solids) de 2.500 miligramos por litro (mg/L). No se anticipa que el aumento del volumen de descarga solicitado produzca ningún impacto negativo en la calidad existente del agua subterránea.

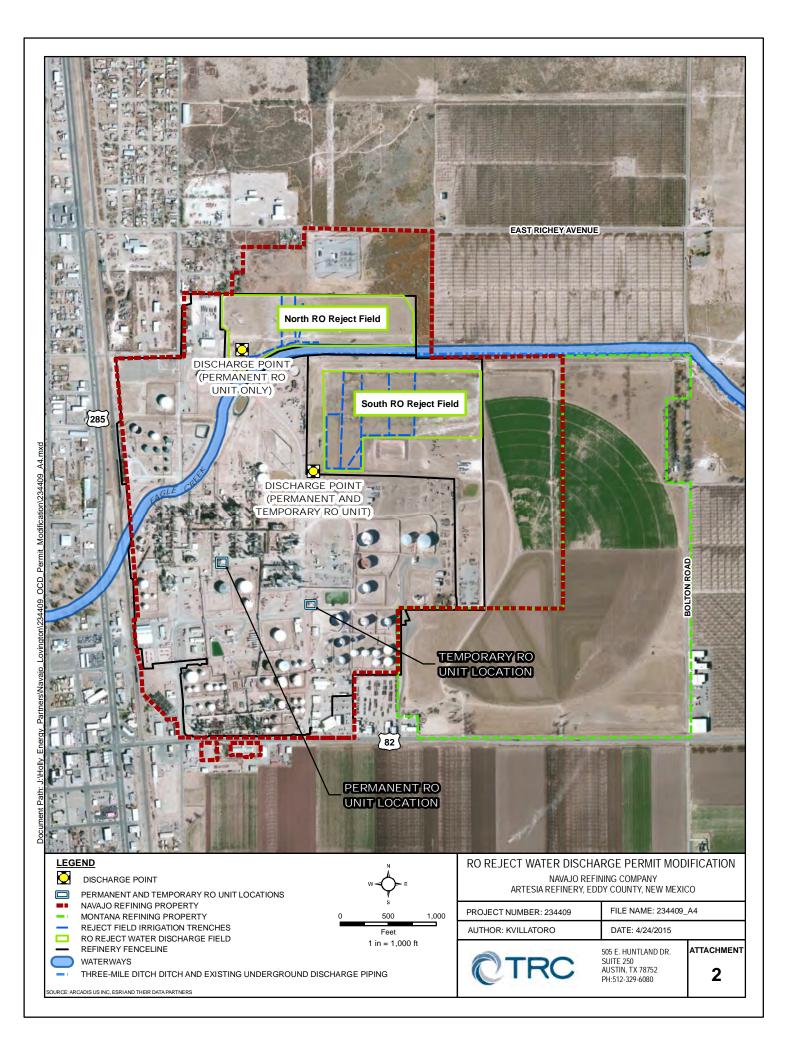
La Refinería está ubicada en 501 East Main, Artesia, NM. La descarga, de mayor volumen continuará siendo aplicada a una superficie abierta dentro de los límites de la propiedad de la Refinería, la cual está ubicada en la parte norte de la Refinería, al este de la carretera US-285, y sur de la Avenida East Richey.

Comentarios o preguntas acerca de esta solicitud pueden ser mandados al siguiente contacto de la OCD:

Mr. Carl Chavez Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 (505) 476-3490 carlj.chavez@state.nm.us

La OCD aceptará comentarios y declaraciones de interés con respecto a esta solicitud y creará una lista de contactos específica para todas personas que deseen recibir avisos en el futuro.

Attachment 2 Reverse Osmosis Unit and Discharge Locations



Attachment 3 Temporary Reverse Osmosis Unit Technical Summary

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### Temporary Reverse Osmosis (RO) Unit Technical Summary

### **Operational Overview**

The purpose of the Refinery's RO units, including the temporary RO unit, is to remove dissolved solids from incoming fresh water by passing high pressure feed water through a series of filter elements that contain a semi-permeable RO membrane. This membrane prevents large molecules, or dissolved solids, from passing through the membrane, but does allow smaller water molecules to pass through the membrane. The clean water then becomes the RO permeate, or product water (suitable for use in critical needs for boiler steam generation and cooling tower operation), while the concentrated, dissolved solids in the feed water becomes the RO concentrate, or reject. The Refinery's RO units (temporary and permanent) function similarly in the pre-treatment of fresh groundwater.

Process drawings are included in the RO Unit Operational Overview. The process drawings depict the RO unit pump and vessel skid layouts, instrumentation and controls, and trailer plot plan. The features and operation of the Refinery's RO units, uncluding the temporary RO unit, are further summarized below.

### **Percent Recovery**

Typically, RO systems are designed to operate at 75% recovery, though the achievable percent recovery is dependent on a number of factors and consequently, can vary. Percent recovery is defined as the volume of permeate water produced per equivalent volume of feed water. For example, a system that produces 50 gallons per minute (gpm) of permeate at 75% recovery will have a feed water flow rate of 67 gpm. The remaining 17 gpm will carry away the concentrated dissolved solids in the RO reject stream. The ratio of permeate to feed water is a critical operating and design parameter that needs to be maintained in order to achieve maximum efficiency of the system.

In practice, recovery percentages vary based upon the quality of the incoming water, system design, and other operational factors; however, a minimum concentrate, or reject water discharge, flow rate must always be maintained to effectively remove the concentrated dissolved solids from the system. The minimum concentrate flow rate is determined by the minimum velocity requirements of the membrane manufacturer and the design of the system arrays. RO systems are designed to operate at a specific rate of permeate production, and require a minimum concentrate flow to achieve this permeate production level. The percent recovery is achieved by setting the concentrate flow rate; too low of a concentrate flow will lead to scaling and deposition on the membrane surface; too high of a concentrate flow rate will decrease the amount and quality of the permeate water produced. In summary, the concentrate flow, or reject water discharge volume, should be maintained at a volume equal to or greater than the minimum volume required for efficient operation of the system; i.e., concentrate flow cannot be lowered with the sole purpose of minimizing reject water discharge volumes.

### **Temporary RO System Array**

The temporary RO unit consists of two individual single pass RO systems housed in one trailer. Each system, in turn, is designed to produce 200 gpm of permeate at 75% recovery, resulting in a design rate of 67 gpm of reject flow. With two systems in each unit, the total unit permeate flow is designed to be 400 gpm resulting in a total unit reject flow of 134 gpm.

Each system is designed to use 48-inch, 400  $ft^2$  elements distributed in two arrays. Concentrate water from the first array feeds the second array. The design array for the RO system is 8-4, meaning the first array contains eight pressure vessels operating in parallel, and the second array contains four pressure vessels operating in parallel. Each pressure vessel contains four membrane elements.

### **Additional Temporary RO Unit Process Features**

### **Booster Pumps**

Each RO system is equipped with a low pressure booster pump at the inlet to ensure sufficient pressure to drive the feed water through the pre-filter cartridges and supply the high pressure RO process pump.

### **Pre-Filters**

Each system contains two pre-filters for removal of suspended solids from the feed water. The prefilters protect the RO system membranes by removing solids that would otherwise plug the small channels in the membrane.

### **Process Pumps**

Each RO system is equipped with a high pressure process pump located at the inlet to the pressure vessels.

## **Temporary RO Unit Technical Summary**

The temporary RO unit consists of two skids operating inside of a trailer.

Skid Feed Flow	267 gpm
Total Feed Flow	534 gpm
Skid Permeate (Product) Flow	200 gpm
Total Permeate (Product) Flow	400 gpm
Skid Reject Flow	67 gpm
Total Reject Flow	134 gpm
Design Recovery Rate	75%
Nominal Flux (per skid)	15 gfd
Membranes	
Length	48 inches
Area	$400 \text{ ft}^2$
Membranes	48
Prefilters	
Filter Housings	2
Filters/Housing	12
Filter size	30"
Porosity	5 µm

Attachment 4 Temporary Reverse Osmosis Unit Reject Fluid Sample Analysis Data



# ANALYTICAL REPORT April 16, 2015



## **ARCADIS US - TX**

Sample Delivery Group: Samples Received: Project Number: Description:

L759281 04/15/2015 TX000836.0008.15009 Reject

Report To:

Project Manager 2929 Briarpark Dr., Suite 300 Houston, TX 77042

### Entire Report Reviewed By:

Pamela a. Langford Pam Langford

Pam Lanoford Technical Sarvica Representative

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REGULAR UNIT SOUTH FIELD RD REJECT L	759281-01 GW		Collected by Scott Ude	Collected date/time 04/14/15 13:30	Received date/time 04/15/15 09:00
fethod	Batch	Dilution	Preparation	Analysis	Analysis Analyst
	ana Austra and and a second and a second and a second second second second second second second second second s		date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG782480	1	04/16/15 17:17	04/17/15 15:25	MF
fercury by Method 7470A	WG782318	1	04/20/15 15:24	04/21/15 09:32	ESC
fercury by Method 7470A	WG784623	1	04/25/15 15:21	04/27/15 08:39	ESC
letals (ICPMS) by Method 6020	WG783437	10	04/21/15 20:13	04/23/15 13:38	JD
Aetals (ICPMS) by Method 6020	WG783437	5	04/21/15 20:13	04/23/15 12:53	JD
Polychlorinated Biphenyls (GC) by Method 8082	WG782838	1	04/17/15 15:34	04/20/15 10:42	EGR
emi Volatile Organic Compounds (GC/MS) by Method 8270C	WG782361	1	04/16/15 16:08	04/17/15 05:02	ADF
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG782361	1	04/16/15 16:08	04/17/15 17:00	KMF
emi-Volatile Organic Compounds (GC) by Method 8015	WG782628	1	04/16/15 08:43	04/16/15 17:17	JNS
/olatile Organic Compounds (GC) by Method 8015D/GRO	WG782393	1	04/16/15 21:05	04/16/15 21:05	MCB
olatile Organic Compounds (GC/MS) by Method 8260B	WG782439	1	04/18/15 02:24	04/18/15 02:24	KLO
Vet Chemistry by Method 353.2	WG783651	1	04/24/15 12:35	04/24/15 12:35	JAL
Vet Chemistry by Method 9012B	WG783058	1	04/18/15 12:19	04/21/15 09:48	MCG
Vet Chemistry by Method 9056MOD	WG782493	1	04/20/15 19:21	04/20/15 19:21	NJM
Vet Chemistry by Method 9056MOD	WG782493	50	04/20/15 22:25	04/20/15 22:25	NJM
TEMPORARY UNIT SOUTH FIELD RD REJEC			Collected by Scott Ude	Collected date/time 04/14/15 13:15	Received date/time 04/15/15 09:00

.

ACCOUNT:

Method	Batch	Dilution	Preparation	Analysis	Analysis Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG782480	1	04/16/15 17:17	04/17/15 15:28	MF
Mercury by Method 7470A	WG782318	1	04/20/15 15:24	04/21/15 09:45	ESC
Mercury by Method 7470A	WG784623	1	04/25/15 15:21	04/27/15 08:42	ESC
Metals (ICPMS) by Method 6020	WG783437	10	04/21/15 20:13	04/23/15 13:41	DL
Metals (ICPMS) by Method 6020	WG783437	5	04/21/15 20:13	04/23/15 13:02	dL
Polychlorinated Biphenyls (GC) by Method 8082	WG782838	1	04/17/15 15:34	04/20/15 10:55	EGR
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG782361	1	04/16/15 16:08	04/17/15 05:25	ADF
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG782361	1	04/16/15 16:08	04/17/15 17:17	KMF
Semi-Volatile Organic Compounds (GC) by Method 8015	WG782628	1	04/16/15 08:43	04/16/15 17:34	JNS
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG782393	1	04/16/15 21:27	04/16/15 21:27	МСВ
Volatile Organic Compounds (GC/MS) by Method 8260B	WG782439	1	04/18/15 02:46	04/18/15 02:46	KLO
Wet Chemistry by Method 353.2	WG783651	1	04/24/15 12:39	04/24/15 12:39	JÁL
Wet Chemistry by Method 9012B	WG783058	1	04/18/15 12:19	04/21/15 09:49	MCG
Wet Chemistry by Method 9056MOD	WG782493	1	04/20/15 19:36	04/20/15 19:36	NJM
Wet Chemistry by Method 9056MOD	WG782493	50	04/20/15 22:40	04/20/15 22:40	NJM

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### CASE NARRATIVE

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Pamela a. Langford Pain Langford

Pam Langford Technical Service Representative

ACCOUNT:

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	Result	Qualifler	MDL	RDL	Dilution	Analysis	Batch	
nalyte	ug/l		ug/t	ug/l		date / time		
Solids	2950000		2800	10000	1	04/17/2015 15:25	<u>WG782480</u>	
Net Chemistry	v by Method 3	353.2						
	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	Batch	
nalyte	ug/l		ug/l	ug/l		date / time		an Advantum Management and industry of the Statistical Advances
litrate-Nitrite	2140		20.0	100	1	04/24/2015 12:35	<u>WG783651</u>	
Net Chemistry	v by Method S	012B						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
	ug/l		ug/i	ug/l		date / time		
Analyte			1.80	5,00	4	04/21/2015 09:48	WG783058	

	Result	Qualifier	MDL.	RDL	Dilution	Analysis	Batch	8
Analyte	ug/l		ug/l	ug/l		date / time		ĨΑ
Chloride	52900		52.0	1000	1	04/20/2015 19:21	WG782493	L
Fluoride	3610		9,90	100	1	04/20/2015 19:21	<u>WG782493</u>	<sup>9</sup> S
Sulfate	1530000		3900	250000	50	04/20/2015 22:25	WG782493	Ľ

### Mercury by Method 7470A

	Result	Qualifier MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l	ug/l	ug/l		date / time	
Mercury	U	0.0490	0.200	1	04/27/2015 08:39	WG784623
Mercury, Dissolved	U	0.0490	0,200	1	04/21/2015 09:32	WG782318

### Metals (ICPMS) by Method 6020

annan tugan an ann ta	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum,Dissolved	16.6	Ţ	10.0	500	5	04/23/2015 12:53	<u>WG783437</u>
Arsenic,Dissolved	U		1.20	10,0	5	04/23/2015 12:53	<u>WG783437</u>
Barium,Dissolved	69,6		1.80	25.0	5	04/23/2015 12:53	<u>WG783437</u>
Boron, Dissolved	116		7.50	100	5	04/23/2015 12:53	<u>WG783437</u>
Cadmium,Dissolved	U		0.800	5.00	5	04/23/2015 12:53	WG783437
Calclum,DissolVed	685000		460	10000	10	04/23/2015 13:38	<u>WG783437</u>
Chromium, Dissolved	Ų		2.70	10.0	5	04/23/2015 12:53	<u>WG783437</u>
Copper,Dissolved	88.7	<u>J6 01</u>	2,60	25.0	5	04/23/2015 12:53	<u>WG783437</u>
Cobalt, Dissolved	U		1.30	10.0	5	04/23/2015 12:53	WG783437
lron, Dissolved	U U		75.O	500	5	04/23/2015 12:53	<u>W6783437</u>
Lead, Dissolved	U	· · · · · · · · · · · · · · · · · · ·	1.20	10.0	5	04/23/2015 12:53	WG783437
Manganese, Dissolved	2.44	<u> </u>	1.20	25.0	5	04/23/2015 12:53	<u>WG783437</u>
Molybdenum, Dissofved	12.1	<u> </u>	0.700	25.0	5	04/23/2015 12:53	<u>WG783437</u>
Nickel, Dissolved	17,5		1.80	10.0	5	04/23/2015 12:53	<u>WG783437</u>
Potassium, Dissolved	5480		180	5000	5	04/23/2015 12:53	WG783437
Selenium,Dissolved	8,08		1.90	10.0	5	04/23/2015 12:53	<u>WG783437</u>
Silver, Dissolved	U		1.60	10.0	5	04/23/2015 12:53	WG783437
Sodium, Dissolved	60000	Σ	550	5000	5	04/23/2015 12:53	<u>WG783437</u>
Uranium,Dissolved	5.46	Ī	1.60	50.0	5	04/23/2015 12:53	<u>WG783437</u>
Zinc, Dissolved	16,1	J.	13.0	125	5	04/23/2015 12:53	WG783437

### Volatile Organic Compounds (GC) by Method 8015D/GRO

ACCOUNT:

······································	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/i		date / timé	
TPH (GC/FID) Low Fraction	Ų		31.0	100	1	04/16/2015 21:05	WG782393

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### Volatile Organic Compounds (GC) by Method 8015D/GRO

	9					
	Result	Qualifier MDI	. RDL	Dilution	Analysis	Batch
Analyte	ug/l	ug/l	ug/I		date / time	
/S) a n o Triffue	undoluene/FIOL 913		62 (3-	17R	04/16/2015 21	05 WG782393

### Volatile Organic Compounds (GC/MS) by Method 8260B

ACCOUNT:

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l	nergernis (skalaina) eksisisisise kardise sike atalah (skala) (s	ug/l	ug/l	ada Solandag Sonaddal Ala, Alanaa sa waxaalaa qaqqaya	date / time	
cetone	U		10.0	50.0	1	04/18/2015 02:24	<u>WG782439</u>
ienzene	U		0.330	1.00	1	04/18/2015 02:24	<u>WG782439</u>
Bromodichloromethane	U		0,380	1.00	1	04/18/2015 02:24	WG782439
romoform	U	<u>J3</u>	0,470	1.00	1	04/18/2015 02:24	<u>WG782439</u>
romomethane	U		0,870	5.00	1	04/18/2015 02:24	<u>WG782439</u>
-Butylbenzene	0,438	4	0,360	1.00	1	04/18/2015 02:24	<u>WG782439</u>
ec-Butylbenzene	U .		0.360	1.00	1	04/18/2015 02:24	WG782439
arbon disulfide	0		Ò.28Ò	1.dő	1	04/18/2015 02:24	<u>WG782439</u>
arbon tetrachloride	U		0.380	1.00	1	04/18/2015 02:24	<u>WG782439</u>
hlorobenzene	U		0.350	1,00	1	04/18/2015 02:24	<u>WG782439</u>
hlorodibromomethane	U		0.330	1.00	1	04/18/2015 02:24	<u>WG782439</u>
hloroethane	U		0,450	5.00	1	04/18/2015 02:24	<u>WG782439</u>
hloroform	U		0.320	5.00	1	04/18/2015 02:24	WG782439
hloromethane	U		0.280	<b>Z</b> .50	1 1	04/18/2015 02:24	<u>WG782439</u>
2-Dibromoethane	U	<u>J3</u>	0.380	1.00	1	04/18/2015 02:24	<u>WG782439</u>
1-Dichloroethane	Û		0.260	1.00	1	04/18/2015 02;24	<u>W6782439</u>
2-Dichloroethane	U		0.360	1.00	1	04/18/2015 02:24	WG782439
t-Dichloroethene	Ú		0,400	1.00	1	04/18/2015 02:24	<u>WG782439</u>
s-1,2-Dichloroethene	U		0.260	1.00	1	04/18/2015 02:24	WG782439
ans-1,2-Dichloroethene	U		0.400	1.00	1	04/18/2015 02:24	<u>W0782439</u>
2-Dichloropropane	U		0.310	1.00	1	04/18/2015 02:24	<u>WG782439</u>
s-1,3-Dichloropropane	U		0.420	1.00	1	04/18/2015 02:24	<u>W6782439</u>
ans-1,3-Dichloropropene	U		0.420	, 1.00	1	04/18/2015 02:24	WG782439
thylbenzene	U		0.380	1.00	1	04/18/2015 02:24	<u>W6782439</u>
opropylbenzene	U		0.330	1.00	1	04/18/2015 02:24	WG782439
Isopropyltoluene	U .		0.350	1.00	1	04/18/2015 02:24	<u>WG782439</u>
-Butanone (MEK)	U		3.90	10.0	1	04/18/2015 02:24	<u>WG782439</u>
Hexanona	U		3.80	10,0	1	04/18/2015 02:24	<u>WG782439</u>
lethylene Chloride	U		1.00	5.00	1	04/18/2015 02:24	<u>WG782439</u>
Methyl-2-pentarione (MIBK)			2,10	10.0	1	04/18/2015 02:24	<u>WG782439</u>
lethyl tert-butyl ether	U		0.370	1.00	1	04/18/2015 02:24	WG782439
aphthalene	U	. Loat or as a pricipal finite study of the	1,00	5,00	tun uni cincination	04/18/2015 02:24	WG782439
-Propylbenzene	U		0.350	1.00	1	04/18/2015 02:24	WG782439
tyrene	u – Li	J3	0.310	1.00		04/18/2015 02:24	WG782439
1,1,2-Tetrachloroethane	U		0.380	1.00	1	04/18/2015 02:24	WG782439
1,2,2-Tetrachloroethane	0		0 130	1.00	1	04/18/2015 02:24	WG782439
etrachloroethene	n D		0,370	1.00	1	04/18/2015 02:24	WG782439
oluene	, Ulbréa		0,780	5,00	1	04/18/2015 02:24	W6782439
1,1-Trichloroethane	u ta na namuraaniii U	and a second	0.319	1.00	1	04/18/2015 02:24	WG782439
1,2-Trichloroethane	U	tin the the	0,380	1.00	1	04/18/2015 02:24	WG782439
richloroethene		a contraction of the second	0.400	1.00	1	04/18/2015 02:24	WG782 <u>439</u>
2,4-Trimethylbenzene	Ú		0.370	1,00	1	04/18/2015 02:24	WG782439
3,5-Trimethylbenzene	U		0.390	1,00	1	04/18/2015 02:24	W <u>G782439</u>
inyl chloride	- U		0.260	1.00	1	04/18/2015 02:24	WG782439
-Xylene	u ha Maria an Maria an Maria. U		0.340	1.00		04/18/2015 02:24	<u>WG782439</u>
n&p-Xylene			0.720	1.00	<u>i li presione</u>	04/18/2015 02:24	WG782439
ylenes, Total	44 - Main 14 11		1.10	3,00	r seosa las isticioù 1	04/18/2015 02:24	WG782439
(S) Toluene-dB	102	najpististiki.	n Mariana (ang ang ang ang ang ang ang ang ang ang	3.00 88,5-111		04/18/2015 02:24	W6762439
						and the second	
(S) Dibromofluoromethane	94.8 104	. The second state of the state of	1	78.3-121 71.0-126		04/18/2015 02:24 04/18/2015 02:24	WG782439 WG782439

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ONE LAB, NATIONWIDE.

### Semi-Volatile Organic Compounds (GC) by Method 8015

	5	· · · · ·						
1	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	 1
Analyte	ug/l		ug/l	ug/l-		date / time		
C10-C28 Diesel Range	U	aan ahaa kalkaa ka	22.0	100	1	04/16/2015 17:17	WG782628	2.
C28-C40 Oll Range	U		12.0	100	1	04/16/2015 17:17	WG782628	L
(S) o-Terphenyl	115			50.0-150		04/16/2015 17:17	WG782628	з

### Polychlorinated Biphenyls (GC) by Method 8082

ACCOUNT:

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		10304000.04
PCB 1016	U		0.100	0.500	umerilleme.	04/20/2015 10:42	WG782838	
PCB 1221	U		0.0730	0.500	1	04/20/2015 10:42	WG782838	
PCB 1232	U		0.0420	0.500	1	04/20/2015 10:42	WG78283B	
PČB 1242	U		0.0470	0.500	1	04/20/2015 10:42	WG782838	
PCB 1248	U		0.0860	0.500	1	04/20/2015 10:42	WG782838	
PCB 1254	Ú		0.0470	0.500	1	04/20/2015 10:42	<u>W6782838</u>	
PCB 1260	U		0.120	0.500	1	04/20/2015 10:42	WG782838	
(S) Decachlorobiphenyl	85.1			10.0-156		04/20/2015 10:42	WG782838	
(S) Tetrachioro-m-xylene	82.3			13. <i>9-13</i> 7		04/20/2015 10:42	WG782838	

### Semi Volatile Organic Compounds (GC/MS) by Method 8270C

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Acenaphthene	U		0.320	1.00	1	04/17/2015 05:02	WG782361
Acerraphthylene	U		0.310	1.00	1	04/17/2015 05:02	<u>WG782361</u>
Acetophenone	U		2.70	10.0	1	04/17/2015 05:02	WG782361
Anthracene	U		0,290	1.00	1	04/17/2015 05:02	<u>WG782361</u>
Atrazine	U		1.50	10.0	1	04/17/2015 05:02	WG782361
Benzaldehyde	U		1.40	10.0	1	04/17/2015 05:02	WG782361
Benzo(a)anthracene	U		0.110	1.00	1	04/17/2015 05:02	WG782361
Benzo(b)fluoranthene	U		0.0900	1.00	1	04/17/2015 05:02	WG782361
Benzo(k)fluoranthene	U		0.360	1.00	1 <sup>.</sup>	04/17/2015 05:02	WG782361
Benzo(g,h,i)perylene	U		0.160	1,60	1	04/17/2015 05:02	WG782361
Benzo(a)pyrene	U		0.340	1.00	1	04/17/2015 05:02	WG782361
Bis(2-chlorethoxy)methane	L.		0,330	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Bis(2-chloroisopropyl)ether	Ŭ		0.440	10.0	1	04/17/2015 05:02	WG782361
Biphenyl	J		0.210	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Bis(2-chloroethyl)ether	U		1.60	10.0	1	04/17/2015 05:02	WG782361
4-Bramophenyl-phenylether	U		0.340	10.Ò	1	04/17/2015 05:02	WG782361
2-Chloronaphthalene	U	,	0.330	1.00	1	04/17/2015 05:02	WG782361
4-Chlorophenyl-phenylether	U		0.300	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Chrysene	U		0.330	1.00	1	04/17/2015 05:02	WG782361
Caprolactam	0.894	1	0.580	10.0	ſ	04/17/2015 05:02	<u>WG782361</u>
Carbazole	U		0,160	10.0	1	04/17/2015 05:02	WG782361
Dibenz(a,h)anthracena	U		0,280	1.00	1	04/17/2015 05:02	WG782361
3,3-Dichlorobenzidine	U		2.00	10.0	1	04/17/2015 05:02	WG782361
2,4-Dinitrotoluene	U		1,60	10.0	1	04/17/2015 05.02	WG782361
2,6-Dinitrotoluene	U		0,280	10.0	1	04/17/2015 05:02	WG782361
Fluoranthene	U		0.310	1.00	1	04/17/2015 05:02	<u>WG782361</u>
Fluorene	U		0.320	1.00	1	04/17/2015 05:02	WG782361
Hexachlorobenzene	Ú		0.340	1.00	1	04/17/2015 05:02	<u>WG782361</u>
Hexachloro-1,3-butadiene	U		0.330	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Hexachlorocyclopentadiene	U		2.30	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Hexachloroethane	U		0.360	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Indeno(1,2,3-cd)pyrene	Ú		0.280	1,00	1	04/17/2015 05:02	<u>WĞ782361</u>
Isophorone	U		0,270	10.0	1	04/17/2015 05:02	WG782361
Naphthalene	Ú		0.370	1.00	1	04/17/2015 05:02	WG782361
Nitrobenzene	U		0.370	10.0	1	04/17/2015 05:02	WG782361

PROJECT:

# <sup>1</sup>Cp <sup>2</sup>Tc <sup>3</sup>Ss <sup>4</sup>Cn <sup>5</sup>Sr <sup>6</sup>Qc <sup>7</sup>Gl <sup>8</sup>Al <sup>9</sup>Sc

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### Semi Volatile Organic Compounds (GC/MS) by Method 8270C

	Result	Qualifler	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/i	ug/i		date / time	
1-Nitrosodiphenylamine	U		0.300	10.0	1	04/17/2015 05:02	<u>W6782361</u>
n-Nitrosodi-n-propylamine	U		0.400	10.0	1	04/17/2015 05:02	WG782361
Phenanthrene	U		0,370	1,00	1	04/17/2015 05:02	<u>WG782361</u>
Benzylbutyl phthalate	U		0.280	3.00	1	04/17/2015 05:02	<u>WG782361</u>
Bis(2-Ethylhexyl)phthalate	2,59	l l l	0.710	3.00	1	04/17/2015 05:02	<u>W6782351</u>
)I-n-butyl phthalate	2.33	J	0.270	3.00	1	04/17/2015 05:02	WG782361
Diethyl phthalate	U		0.280	3,00	1	04/17/2015 05:02	<u>WG782361</u>
Dimethyl phthalate	0.343	Ţ	0.280	3.00	1	04/17/2015 05:02	<u>WG782361</u>
)i-n-octyl phthalate	0.447		0.280	3.00	Anton.	04/17/2015 05:02	<u>W0782361</u>
Pyrene	U		0.330	1.00	1	04/17/2015 05:02	WG782361
l-Methylnophthalene	U		0,220	1.00	-1	04/17/2015 05:02	<u>WG782361</u>
4-Chioroaniline	U		0,380	10.0	1	04/17/2015 05:02	<u>WG782361</u>
1-Chloro-3-methylphenol	IJ		0.260	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2-Chlorophenol	U		0.280	10.0	1	04/17/2015 05:02	<u>WG782361</u>
lbenzofuran	U		0,340	10,0	1	04/17/2015 05:02	<u>W6782361</u>
,4-Dichlorophenol	U		0.280	10.0	1	04/17/2015 05:02	WG782361
,4-Dimethylphenol	U		0.620	10,0	1	04/17/2015 05:02	<u>WG782351</u>
,6-Dinitro-2-methylphenol	U		2,60	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2,4-Dinitrophenol	U		3,20	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2-Methylnaphthalene	U		0.310	1.00	1	04/17/2015 05:02	<u>WG782361</u>
4-Methylphenol	U		0.310	10.0	1	04/17/2015-05:02	<u>W6782361</u>
8&4-Methyl Phenol	U		0.270	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2-Nitroaniline	U		1,90	10.0		04/17/2015 05:02	WG782361
3-Nitroaniline	U		0,310	10.0	1	04/17/2015 05:02	WG782361
l-Nitraaniline	U.		0.350	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2-Nitrophenol	U		0.320	10.Q	1	04/17/2015 05:02	WG782361
-Nitrophenol	U		2.00	10.0	1	04/17/2015 05:02	<u>WG782361</u>
Pentachlorophenol	U		0.310	1.00	1	04/17/2015 05:02	WG782361
heno	Ű		0.330	10.0	1	04/17/2015 05:02	<u>WG782361</u>
2,4,6-Trichlorophenol	U		0,300	10.0	1	04/17/2015 05:02	WG782361
2,4,5-Trichlorephenol	U		0,240	10.0	1	04/17/2015 05:02	WG782361
,3,5-Trinitrobenzene	U		1.30	10.0	1	04/17/2015 17:00	WG782361
(S) Z-Fluorophenol	57.8			10.0-77.9		04/17/2015 05:02	<u>W6782361</u>
(S) Phenol-d5	44.0			5.00-70.1		04/17/2015 05:02	WG782361
(S) Nittobenzene-d5	74,1			21.8-123		04/17/2015 05:02	WG782361
(S) 2-Fluorobiphenyl	81.3			29.5-131		04/17/2015 05:02	WG782361
(S) 2,4,6-Tribromaphenol	75.0			11.2-130		04/17/2015 05:02	<u>WG782361</u>
(S) p-Terphenyl-d14	77.5			29.3-137		04/17/2015 05:02	WG782361

PROJECT:

ACCOUNT:

SDG:

<sup>1</sup>Cp <sup>2</sup>Tc <sup>3</sup>Ss <sup>4</sup>Cn <sup>6</sup>Qc <sup>7</sup>Gl <sup>8</sup>Al <sup>9</sup>Sc

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Dissolved Solids	3590000	and an	2800	10000	1	04/17/2015 15:28	WG782480	
Wet Chemistry	by Method 3	53.2						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/i	ug/l		date / time		and a language and a start of the set
Nitrate-Nitrite	2470		20.0	100	1	04/24/2015 12:39	WG783651	
							<b>4</b>	
Wet Chemistry	by Method 9	012B						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ugA	ug/i		date / time		
C <b>y</b> anide	U		1.80	5.00	1	04/21/2015 09:49	WG783058	
Wet Chemistry	by Method 9	056MOD						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ugA		ug/l	ug/l		date / time		10161-00-0010-0010-00-00-00-00-00-00-00-00-0
NAMES AND ADDRESS OF A DESCRIPTION OF A	and a home have been been presidented and the second second second second second second second second second s	TO IN SUCCESSION AND ADDRESS AND ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRES		4000	-	04/20/2015 10:26	WC707402	

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	Result <u>Qu</u>	alifier MDL	RDL	Dilution	Analysis	Batch	8
Analyte	ugA	ug/l	ug/l		date / time		Al
Chloride	58900	52.0	1000	1	04/20/2015 19:36	<u>WG782493</u>	
Fluaricle	3880	9.90	100	1	04/20/2015 19:36	WG782493	°Sc
Sulfate	1830000	3900	250000	50	04/20/2015 22:40	WG782493	

## Mercury by Method 7470A

	Result <u>Q</u>	ualifier MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l	ug/l	ug/l		date / time	
Mercury	U	0.0490	0.200	1	04/27/2015 08:42	WG784623
Mercury, Dissolved	1	0.0490	0.200	1	04/21/2015 09:45	WG782318

### Metals (ICPMS) by Method 6020

		~			Diller	N <b>.</b>	Datab
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum, Dissolved	10.9	ī	10.0	500	5	04/23/2015 13:02	<u>WG783437</u>
Arsenic,Dissolved	1,52	Ţ	1.20	10.0	5	04/23/2015 13:02	<u>₩G783437</u>
Barium, Dissolved	72.2		1.80	25.0	5	04/23/2015 13:02	<u>WG783437</u>
Boron,Dissolved	123		7,50	100	5	04/23/2015 13:02	<u>WG783437</u>
Cadmlum, Dissolved	.U		0.800	5.00	5	04/23/2015 13:02	<u>WG783437</u>
Calcium, Dissolved	806000		460	10000	10	04/23/2015 13:41	<u>WG783437</u>
Chromium, Dissolved	U		2.70	10.0	5	04/23/2015 13:02	<u>WG783437</u>
Copper, Dissolved	U		2,60	25,0	5	04/23/2015 13:02	<u>WG785437</u>
Cobalt, Dissolved	U		1.30	10.0	5	04/23/2015 13:02	<u>WG783437</u>
lron,Dissolved	0		75,0	500	5	04/23/2015 13:02	<u>WG783437</u>
Lead, Dissolved	U		1.20	10.0	5	04/23/2015 13:02	WG783437
Manganese, Dissolved	5.10	<u>j</u>	1.20	25.0	5	04/23/2015 13:02	<u>W6783437</u>
Malybdenum,Dissolved	13.0	Ţ	0.700	25.0	5	04/23/2015 13:02	WG783437
Nickel, Dissolved	U		1.80	10.0	5	04/23/2015 13:02	<u>WG783437</u>
Potassium, Dissolved	6600		180	5000	5	04/23/2015 13:02	WG783437
Selenium, Dissolved	8.82		1,90	10.0	\$	04/23/2015 13:02	<u>WG783437</u>
Silver, Dissolved	U	······	1.60	10.0	5	04/23/2015 13:02	<u>WG783437</u>
Sodium, Dissolved	70300		55Õ	5000	5	04/23/2015 13:02	WG783437
Uranlum, Dissolved	6,09	J	1.60	50.0	5	04/23/2015 13:02	WG783437
Zinc, Dissolved	U		13.0	125	- 6	04/23/2015 13:02	WG785437
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### Volatile Organic Compounds (GC) by Method 8015D/GRO

ACCOUNT:

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/I	ug/l		date / time	
TPH (GC/FID) Low Fraction	U		31.0	100	1	04/16/2015 21:27	WG782393

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olatile Organic (	Compound	ds (GC) by N	lethod 801	ISD/GRO				
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
alyte	ug/l	-	ug/l	ug/i		date / time		
(S) a,a,a-Trifluorotoluene(I	1D) 91.1			62.0-128		04/16/2015 21:27	<u>WG782393</u>	filen f
olatile Organic (	Compound	ds (GC/MS)	by Method	8260B				[3
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
nalyte	ug/l	NAMES AND ADDRESS OF A DECEMPTION OF A	ug/l	ug/l		date / time	an na banda na karana ka sa	4
cetone	U		10.0	50.0	1	04/18/2015 02:46	<u>WG782439</u>	
erzene	U		0.330	1.00	1	04/18/2015 02:46	<u>WG782439</u>	
omodichloromethane	U		0.380	1.00	1	04/18/2015 02:46	WG782439	
omoform	U		0.470	1.00	1	04/18/2015 02:46	WG782439	
omomethane	U	g gadg addaer omste sterne gan menner	0.870	5.00	1	04/18/2015 02:46	WG782439	é la
Butylbenzene	l l		0.360	1.00	1	04/18/2015 02:46	WG782439	iy-94
c-Butylbenzene	U	Antaning in composition of the	0.360	1.00	1 	04/18/2015 02:46	WG782439	
npou gizaltige	<u>U</u>		0.280	1.00	4	04/18/2015 02:46	WC782439	
rbon tetrachloride	U	ingen ander en er	0.380	1.00	 	04/18/2015 02:46 04/18/2015 02:46	WG782439 WG782439	L
lorobenzene	U		0,350	1.00	4			
nlorodlbromomethane	U	<u>1911, 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. </u>	0.330	1.00	l Trajecta (1911)	04/18/2015 02:46	WG782439 WG782439	uga da l
loroethane	U		0.450	5.00	4	04/18/2015 02:46 04/18/2015 02:46	W6782439 W6782439	F
זור איז	U	ce certra ritta ini ini ini	0.320	5.00 2.50	1	04/18/2015 02:46	WG782439	
1loromethane	U		0.280	2,00	1	04/18/2015 02:46	WG782439	
2-Dibromoethane	U		0.380	1.00	1	04/18/2015 02:46	W6782439	
-Dichloroethane			0.360	1.00	1	04/18/2015 02:46	WG7824 <u>39</u>	
2-Dichloroethane	U Internetionalista		0.300	1.00		04/18/2015 02:46	WG782439	
Dichloroethene		an a	0.260	1.00	1991	04/18/2015 02:46	WG782439	
s-1,2-Dichloroethene	U	Digini i Mirrida Brijin	0.280	1.00		04/18/2015 02:48	WG782439	
ans-1,2-Dichloroethene	U	ie i di d	0.310	1.00	1	04/18/2015 02:46	WG782439	
2-Dichloropropane	U		0.420	1.00	N	04/18/2015 02:46	WG782439	
s-1,3-Dichloropropene ans-1,3-Dichloropropene	U	genis nel Mindifilia.T.	0.420	1.00	1	04/18/2015 02:46	WG782439	ula ann ann ag i
thylbenzene	0		0.380	1.00	1	04/18/2015 02:46	WG782439	
opropylbenzene	U	19-49-4-120-4 <u>8-72-001</u> 00	0,330	1.00	1 1	04/18/2015 02:46	WG782439	
-isopropyltoluene		Hidis-Anizaita (14	0.350	1.00	1	04/18/2015 02:46	WG782439	
-Butanone (MEK)	U	.124 (1942) (C. S. C. KETA 6, 494 (C. 20	3.90	10.0	1	04/18/2015 02:46	WG782439	
-Hexanone			3,80	10.0	1	04/18/2015 02:46	WG782439	
lethylene Chloride	U	tinter and a state of the state	1.00	5.00	1	04/18/2015 02:46	WG782439	
Methyl-2-pentanone (MIB)			210	10.0	1	04/18/2015 02:46	<u>w</u> 6782439	
lethyl tert-butyl ether	U	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	0.370	1.00	1	04/18/2015 02:46	WG782439	
aphthalene	U		1,00	5.00	1	04/18/2015 02:46	WG782439	
-Propylbenzene	U		0.350	1.00	1	04/18/2015 02:46	WG782439	
tyrene	U		a 31a	1.00	1	04/18/2015 02:46	WG782439	
1,1,2-Tetrachloroethane	U		0,380	1.00	1	04/18/2015 02:46	WG782439	
1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/18/2015 02:46	WG782439	
etrachloroethene	U		0.370	1.00	1	04/18/2015 02:46	WG782439	
oluene	U <sup>1</sup>		0,780	5.00	1	04/18/2015 02:46	WG782439	
1,1-Trichloroethane	U		0.319	1.00	1	04/18/2015 02:46	WG782439	
1,2-Trichleroethane	1		0.380	1.Ø0	1	04/18/2015 02:46	<u>WG782439</u>	
ichloroethene	U		0.400	1.00	1	04/18/2015 02:46	WG782439	
2,4-Trimethylbenzene	U		0.370	1.00	1	04/18/2015 02:46	<u>WG782439</u>	
3,5-Trimethylbenzene	U		0,390	1.00	1	04/18/2015 02:46	<u>WG782439</u>	Communit of the first
/inyl chloride	U		Ó.260	1.00	1	04/18/2015 02:46	<u>WG782439</u>	
-Xylene	U		0,340	1.00	1	04/18/2015 02:46	<u>WG782439</u>	
n&p-Xylene	U -		0.720	1.00	1	04/18/2015 02:46	<u>WG782439</u>	
ylenes, Total	U		1.10	3.00	1	04/18/2015 02:46	<u>WG782439</u>	
(S) Toluene-d8	103			88.5-M	rdhie	04/18/2015 02:46	WG782439	
(S) Dibromofluoromethan	e 93.2			78.3-121		04/18/2015 02:46	WG782439	

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### Semi-Volatile Organic Compounds (GC) by Method 8015

	9	· · · · ·	-/ 2					1
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/ì		ug/t	ug/l		date / time		<b>.</b>
C10-C28 Diesel Range	U		22.0	100	1	04/16/2015 17:34	WG782628	 2
C28-C40 Oil Range	U		12.0	100	1	04/16/2015 17:34	WG782628	
(S) o-Terphenyl	116			50.0-150		04/16/2015 17:34	WG782628	3

### Polychlorinated Biphenyls (GC) by Method 8082

ACCOUNT:

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
PCB 1016	U		0.100	0.500	1	04/20/2015 10:55	WG782838	
PCB 1221	U		0.0730	0.500	1	04/20/2015 10:55	WG782838	
PCB 1232	U		0.0420	0.500	1	04/20/2015 10:55	WG782838	
PGB 1242	U		0.0470	0.500	1	04/20/2015 10:55	WG782838	
PCB 1248	U		0.0860	0.500	1	04/20/2015 10:55	WG782838	
PCB 1254	U		0.0470	0.500	1	04/20/2015 10:55	WG782838	
PCB 1260	U		0,120	0.500	1	04/20/2015 10:55	WG782838	
(S) Decachlorobiphenyl	85.8			10:0-156		04/20/2015 10:55	WG782838	
(S) Tetrachloro-m-xylene	85.6			13.9-137		04/20/2015 10:55	WG782838	

### Semi Volatile Organic Compounds (GC/MS) by Method 8270C

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/I	ug/l	10070-0400-0500 - 100 - 1	date / time	
Acenaphthene	υ		0.320	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Acenaphthylene	U		0,310	1.00		04/17/2015 05:25	W6782361
Acetophenone	U		2.70	10.0	1	04/17/2015 05:25	WG782361
Anthracene	U		0.290	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Atrazine	U		1.50	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Benzaldehyde	U	a doindíon deile a Childrean a stáite	1.40	10.0	1	04/17/2015 05:25	WG782361
Benzo(a)anthracene	U		0.110	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Benzo(b)fluoranthene	U		0.0900	1.00	1	04/17/2015 05:25	WG782361
Benzo(k)fluoranthene	U		0,360	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Benzo(g,h,i)perylene	Û.		0.160	1.00	1	04/17/2015 05:25	<u>WG78236</u> 1
Benzo(a)pyrene	U		0.340	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Bis(2-chlorethoxy)methane	U		0.330	10.0		04/17/2015 05:25	WG782361
Bis(2-chloroisopropyl)ether	Ų		0.440	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Biphenyl	U		0.210	10.0	1	04/17/2015 05:25	<u>WG782351</u>
Bis(2-chloraethyl)ether	υ		1.60	10.0	1	04/17/2015 05:25	<u>WG782361</u>
4-Bromophenyl-phenylether	U		0.340	10.0		04/17/2015 05:25	WG787361
2-Chloronaphthalene	U		0.330	1.00	1	04/17/2015 05:25	<u>WG782361</u>
4-Chlorophenyl-phenylether	U		0.300	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Chrysene	U		0,330	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Caprolactam	υ		0.580	10.0	1	04/17/2015 05:25	WG782361
Carbazole	U		0.160	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Dibenz(a,h)anthracene	0		0.280	1.00	1	04/17/2015 05:25	<u>WG782361</u>
3,3-Dichlorobenzidine	U		2.00	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2,4-Dinitrotoluene	Ù		1.60	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2,6-Dinitrotoluene	Ų		0.280	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Fluoranthene	U		0.310	1.00	1	04/17/2015 05:25	<u>W6782361</u>
Fluorene	U		0.320	1.00	1	04/17/2015 05:25	WG782361
Hexachloröbenzene	U		0.340	1,00	1	04/17/2015 05:25	<u>WG782361</u>
Hexachloro-1,3-butadiene	U		0,330	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Hexachlorocyclopentadiene	U		2,30	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Hexachloroethane	U	,	0.360	10.0	1	04/17/2015 05:25	WG782361
Indeno(1,2,3-co)pyrene	0		0.280	1,00	ti nej	04/17/2015 05:25	<u>WG782361</u>
lsophorone	U		0.270	10.0	1	04/17/2015 05:25	<u>WG782361</u>
Naphthalene	0		0.370	1.00	1	04/17/2015 05:25	<u>W6782361</u>
Nitrobenzene	U		0.370	10.0	1	04/17/2015 05:25	WG782361

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# <sup>1</sup> Cp <sup>2</sup> Tc <sup>3</sup> Ss <sup>4</sup> Cn <sup>5</sup> St <sup>6</sup> Qc <sup>7</sup> Gl <sup>8</sup> Al <sup>9</sup> Sc

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ACCOUNT;

#### SAMPLE RESULTS - 02 L759281

### Semi Volatile Organic Compounds (GC/MS) by Method 8270C

í																										

Ср

Тc

Ss

Cn

Sr

Qc

Gl

ΑI

Sc

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/i		date / time	
n-Nitrosodiphenylamine	U		0,300	10.0	1	04/17/2015 05:25	WG782351
n-Nitrosodi-n-propylamine	U	······································	0.400	10.0	1	04/17/2015 05:25	WG782361
Phenanthrene	l I		0.370	1.00	1	04/17/2015 05:25	<u>WG782361</u>
Benzylbutyl phthalate	U		0.280	3.00	1	04/17/2015 05:25	WG782361
Bis(2-Ethylhexyl)phthalate	1.60	<u> </u>	0,710	3.00	1	04/17/2015 05:25	<u>W6782361</u>
DI-n-butyl phthalate	1.19	J	0.270	3.00	1	04/17/2015 05:25	WG782361
Diethyl phthalate	U		d.280	3.0D	1	04/17/2015 05:25	<u>WG782361</u>
Dimethyl phthalate	U		0.280	3.00	1	04/17/2015 05:25	WG782361
Di-m-octyl phthalate	<b>0.484</b>	<u>l</u>	0.280	3.00		04/17/2015 05:25	WG782361
Pyrene	U		0.330	1.00	1	04/17/2015 05:25	WG782361
1-Methylnaphthalene	U U		0,220	1.00		04/17/2015 05:25	W0782361
4-Chloroaniline	U		Q.380	10.0	1	04/17/2015 05:25	WG782361
4-Chloro-3-methylphenal	Ũ		0.260	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2-Chlorophenol	U		0.280	10.0	1	04/17/2015 05:25	WG782361
Dibenzofuran	U		0,340	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2,4-Dichlorophenol	U		0,280	10.0	- 1	04/17/2015 05:25	WG782361
2,4-Dimethylphenol	U		0.620	10.0	1	04/17/2015 05:25	<u>W6782361</u>
1,6-Dinitro-2-methylphenol	U		2.60	10.0	1	04/17/2015 05:25	WG782361
2,4-Dinitrophenol	U		3.20	10.0	. 1	04/17/2015 05:25	<u>WG782361</u>
2-Methylnaphthalene	U		0.310	1.00	1	04/17/2015 05:25	WG782361
2-Məthylphenal	U U	1	0.310	10.0	1	04/17/2015 05:25	W6782361
3&4-Methyl Phenol	U		0.270	10.0	1	04/17/2015 05:25	WG782361
Z-Nitroaniline	U		1.90	10.0	1	04/17/2015 08:25	WG782361
3-Nitroaniline	U		0.310	10.0	1	04/17/2015 05:25	WG782361
4-Nitroaniline	Ú		0.350	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2-Nitrophenal	U		0.320	10.Q	1	04/17/2015 05:25	WG782361
4 Nitrophenol	D D D		2,00	10.0	1	04/17/2015 05:25	WG782361
Pentachlorophenol	U		0.310	1.00	1	04/17/2015 05:25	WG782361
Phenol	U		0.330	10.0	1	04/17/2015 05:25	<u>WG782361</u>
2,4,6-Trichlorophenol	U		0.300	10,0	1	04/17/2015 05:25	WG782361
2,4,5-Trichlorophenöl	U	11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	0.240	10.0	1	04/17/2015 05:25	WG782361
1,3,5-Trinitrabenzene	U		1.30	10.0	1	04/17/2015 17:17	<u>WG782361</u>
(S) 2-Fluorophenol	586			10,0-77,9		04/17/2015 05:25	W6782361
(S) Phenol-d5	42.8		. Mariana da	5.00-70.1		04/17/2015 05:25	WG782361
(S) Nitrobenzene dS	74.8			21.8-123		04/17/2015 05:25	W6782361
(S) 2-Fluorobiphenyl	91.3			29.5-131		04/17/2015 05:25	WG782361
(S) 2,4,6-Tribromophenol	78.5			11.2-130		04/17/2015 05:25	WG782361
(S) p-Terphenyl-d14	78.1			29.3-137		04/17/2015 05:25	WG782361

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### WG782480 Gravimetric Analysis by Method 2540 C-2011

# QUALITY CONTROL SUMMARY

Mothed Plank (MP)

Method Blank (MB)		•			
(MB) 04/17/15 15:30					
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/l		mg/l	mg/l	
Dissolved Solids	U		2.82	10.0	

### L759238-01 Original Sample (OS) • Duplicate (DUP)

(OS) 04/17/15 15:24 • (DUF	P) 04/17/15 15:24						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	mg/l	mg/l		%	and an and an or or on the last set of self-self-self-self-self-self-self-self-		364
Dissolved Solids	425	428	1	0.703		5	

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/17/15 15:29 · (LCSD) 04/17	/15 15:29									
		LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ma/l	mg/l	mg/l	%	%	%			%	%
				~~~~	~~~~		877. Gent Apple (6.66.00.000.00000000000000000000000000	1. 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 199 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	0.234	5
Dissolved Solids	8800	8540	8520	97.Q	96.8	85.0-115			0.204	

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#### WG783651 Wet Chemistry by Method 353.2

### QUALITY CONTROL SUMMARY L759281-01.02

1B) 04/24/15 12:26				
	MB Result	MB Qualifier MB MDL	MB RDL	
Analyte	mg/l	mg/l	mg/l	
Nitrate-Nitrite	U	0.0197	0.100	
L759360-01 Origina	al Sample (OS) + D	Duplicate (DUP)		

(US) 04/24/15 12.56 • (DUP) 04/24/	10 2.37					
	Qriginal Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		
Nitrate-Nitrite	0.61	0.61	1	0.00	•	20

## L759184-01 Original Sample (OS) • Duplicate (DUP)

ACCOUNT:

(OS) 04/24/15 12:33 · (DUP) 04/24/	/15 12:34					·	
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	8
Analyte	mg/l	mg/i		%			ĔΑ
Nitrate-Nitrite	ND	ND	1	0.00		20	
							6

### Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/24/15 12:29 · (LCSD) 04/	24/15 12:30									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/i	%	%	%			%	
Nitrate-Nitrite	5.QO	4.95	5.03	99.0	101	90.0-110			1.60	20

## L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/24/15 12:35 · (MS) 04/2	4/15 12:36 • (1	MSD) 04/24/15 12:3	8									
	Spike Amo	ount Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%		9999 yuuru yaan ahaan dha ka	%	×
Nitrate-Nitrite	5.00	2.14	7.36	7.39	105	106	1	90.0-110			0.407	20

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### WG783058 Wet Chemistry by Method 9012B

# QUALITY CONTROL SUMMARY

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<sup>3</sup>Ss

⁺Cn

⁵Sr

°Q6 7Gl

<sup>8</sup>Al

°Sc

### Method Blank (MB)

(MB) 04/21/15 09:31			<u></u>		
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/l		mg/l	mg/l	
Cyanìde	U ·		0.00180	0.00500	

### L759459-02 Original Sample (OS) • Duplicate (DUP)

(OS) 04/21/15 09:58 • (DUP) 04/2	/15 09:59					
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%	and the second	
Cyanide	ND	ND	1	0.00		20

### L759253-01 Original Sample (OS) • Duplicate (DUP)

ACCOUNT

(OS) 04/21/15 09:38 • (DUP) 04/21/	15 09:39					
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		
Cyanide	ND	ND	1	0.00	*	20

### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/21/15 09:34 · (LCSD) 04/	/21/15 09:35									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	ж	%			%	×
Cyanide	0.100	0.109	0.105	109 <sup>·</sup>	105	90.0-110			3.74	20

### L759253-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/21/15 09:41 • (MS) 04/21/	15 09:42 • (M	SD) 04/21/15 09:43	3									
	Spike Amount Original Result		MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%	AN ADDRESS MARTIN MUNICIPALITY OF	%	ast utilize approved to the two lot himself which with the state	on mattering and a many straighted control and straight to a star	%	*
AND ADDRESS OF A DESCRIPTION OF A DESCRIPT	SHOP IF IS A REAL PRIME COMPANY COMPANY OF THE	(c) 106 NOTICE INSTOCUTE ADS NOT FOR ADDRESS PARTICIPAL (See You) per new feet 108 108 108	a son soo son son non ika kan kan kan kan kan kan kanada kalistik da siste sistemad	TO SEAL ADD TO STORE TO A CONTRACT AND AN A MARKED STORE ADD AND A STORE ADD ADD ADD ADD ADD ADD ADD ADD ADD AD	89.5	91.5		90.0-110	J6			20

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#### WG782493 Wet Chemistry by Method 9056MOD

# QUALITY CONTROL SUMMARY

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### Method Blank (MB)

(MB) 04/20/15 12:27				
	MB Result	MB Qualifier MB MDL	MB RDL	
Analyte	mg/l	mg/i	mg/l	
Chloride	U	0.0519	1.00	
Fluoride	U U	0.0099	0.100	
Sulfate	U	0.0774	5.00	

### L759295-01 Original Sample (OS) • Duplicate (DUP)

(QS) 04/20/15 13:44 • (DUP) 04/20/	15 13:59					
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%	na or energy experience as an or of 10 key bland	
	7.82	7.83	1	0		20
Fluonde	0.591	0.590	1	¢		20
Sulfate	22.8	22.9	1	0		20

### L759156-01 Original Sample (OS) • Duplicate (DUP)

ACCOUNT

(OS) 04/20/15 20:07 · (DUP) 04/20	/15 20:22						9
	Original Result	<b>DUP</b> Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	mg/l	mg/l		%			
Chloride	2.96	3.04	1	3		20	
Fluonde	Q.234	0.234	4	Ø			
Sulfate	13.5	13.6	1	0		20	

### Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/20/15 12:42 · (LCSD)	04/20/15 12:57										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Límits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	i
Analyte	mg/i	mg/l	mg/l	%	%	%			%	%	
Chloride	40.Q	40.1	39.9	100	100	90-110			1	20	
Fluoride	8.00	8.10	8.02	101	100	90-110					
Sulfate	40.0	40.1	39.7	100	99	90-110			1	20	

## L759081-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/20/15 16:18 - (MS) 04/20	)/15 16:33 • (N	/ISD) 04/20/15 16:4	8									
		unt Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	<b>%</b>
Chloride	50.0	1.09	49.8	51.8	97	101	1	80-120			4	20

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### WG782493 Wet Chemistry by Method 9055MOD

ACCOUNT:

# QUALITY CONTROL SUMMARY

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## L759081-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/20/15 16:18 • (MS) 04/20/1	5 16:33 • (MSE	) 04/20/15 16:48	3										
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec	. MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	F
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		9 <u>/</u> 2			%	%	() () ()
Fluonde	5.00	1,76	6.42	6.61	93	97	1	80-120			3	20	
Sulfate	50.0	53.2	99.0	101	92	95	1	80-120			2	20	

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<sup>8</sup>Al

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PAGE

WG782318 Mercury by Method 7470A

#### QUALITY CONTROL SUMMARY 1759281-01 02

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### Method Blank (MB)

Method Blank (MB)					Cp
(MB) 04/21/15 09:24					<u> </u>
	MB Result	MB Qualifier	MB MDL	MB RDL	$^{2}Tc$
Analyte	mg/l		mg/l	mg/l	IC
Mercury, Dissolved	U		0.000049	0.000200	
					Ss

### Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

							******			
(LCS) 04/21/15 09:27 • (LCSD) 04/21/15 09:30										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LC\$D Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Mercury, Dissolved	0.00300	0.00305	0.00313	102	104	80-120			3	20

PROJECT:

## L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

ACCOUNT:

(OS) 04/21/15 09:32 • (MS) 04/21/15 09:35 • (MSD) 04/21/15 09:43												
	Spike Amou	Spike Amount Original Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	лg/l	mg/l	mg/l	mg/l	%	%		%		i	%	%
Mercury, Dissolved	0.00300	ND	0.00315	0.00311	105	104	1	75-125		-	1	20

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<sup>†</sup>Cn Ŝr Qc GI

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#### WG784623 Mercury by Method 2470A

ACCOUNT:

# QUALITY CONTROL SUMMARY

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### Method Blank (MB)

(MB) 04/27/15 08:26		<u>999</u> 1111111111111111111111111111111111			
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/l		mg/l	mg/l	
Mercury	U		0.000049	0.000200	

### Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

والمسترين المراجع المراجع والمراجع											
(LCS) 04/27/15 08:28 • (LCSD) 04/27/15 08:30											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/l	mg/l	mg/l	%	%	%			%	8	
	0.00300	0.00297	0.00287	99	96	80-120			3	20	

PROJECT

### L760902-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/27/15 08:33 • (MS) 04/27/15 08:35 • (MSD) 04/27/15 08:37												
	Spike Amou	int Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%	an an an an an Andrea 2 Ab. 12, 2010 (1922)	%			%	%
	0.00300	ND	· 0.00290	0.00282	97	94	1	75-125	· •		З	20

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#### QUALITY CONTROL SUMMARY 1759281-01.02

Method Blank (MB)

(MB) 04/23/15 12:47					éistor 6
	MB Result	MB Qualifier	MB MDL	MB RDL	<sup>2</sup> Tc
Analyte	mg/l		mg/l		
Aluminum, Dissolved	0.00723		0.002		3
Arsenic,Dissolved	Ú.		0.00025	0.00200	<sup>°</sup> Ss
Barium,Dissolved	U		0.00036		
Boron, Dissolved	U		0.0015	0.0200	<sup>∦</sup> <sup>4</sup> Cn
Cadmium,Dissolved	U	andaraan aha sa ta'	0.00016		i L
Calcium,Dissplved	D.119		0.046		⁵Sr
Chromium, Dissolved	U Angras os nomenialidas		0.00054		Sr
Copper, Dissolved	U.		0.00052		
Cobalt, Dissolved	U	ash da daariya	0.00026	0.00200 0100	° Qe
Iran,Dissolved	्यः ।	NE CARACTERIA DE	0.0015		
Lead, Dissolved Manganese, Dissolved	0.000705		0.00025	0.00500	<sup>7</sup> GI
Molybdenum, Dissolved	U	100000000000000000000000000000000000000	0.00014	0.00500	
NickelDissolved	0.000423		0.00035	0.00200	°Al
Potassium, Dissolved	0.164		0.037		
Selenium;Dissolved	U		0.00038	0.00200	9
Silver, Dissolved	U		0.00031		Sc
Sodium,Dissolved	U		0.11		1 m
Uranium,Dissolved	U		0.00033		
Zinc, Dissolved	U	ter de la constante de la const	0.00256		÷.,

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

ACCOUNT:

(LCS) 04/23/15 12:49 + (LCSD) 04/2	23/15 12:51									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	*	STREET, DO FOLGO ROCTORIZO TOPOLO INSURVINI MUNICIPALISTI DE 100 100 100	NICH YOMAN TA MATTAL SATISTIC STORES AND	%	
Aluminum,Dissolved	5.00	4.91	4.95	98	99	80-120			1	20
Arsenic Dissolved	0,0500	0.0548	0.0532	110	105	80-120			3	20
Barium, Dissolved	0.0500	0.0479	0.0499	96	100	80-120		street as a condition of the Welling	4	20
Boron Dissolved	D.0500	0.0449	0.0493	90	99	80-120			9	20
Cadmium, Dissolved	0.0500	0.0528	0.0515	106	103	80-120			3	20
Calcium Dissolved	5.00	5.03	4.89	101	98	80-120			3	20
Chromium,Dissolved	0.0500	0.0494	0.0484	99	97	80-120			2	20
Copper, Dissolved	0.0500	0.0522	0.0505	104	-101	80-120			3	20
Cobalt, Dissolved	0.0500	0.0509	0.0499	102	100	80-120		nar i 190 de d'association de	2	20 . 
Iron,Dissolved	5.00	4.81	4.68	96	94	80-120			3	20
Lead, Dissolved	0.0500	0.0503	0.0505	101	101	80-120	····		0 Piet is fit are tas	20
Manganese,Dissolved	0.0500	0.0493	0.0488	99	98	80-120			1	20

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#### **QUALITY CONTROL SUMMARY** 1759281-01.02

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Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

#### // CS) 04/23/45 12-49 . // CSD) 04/23/45 12-51

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier		92	%	
nalyte	mg/l	mg/l	mg/!	%	%	%		*****	-0		
Iolybdenum,Dissolved	0.0500	0.0499	0.0494	100	99	80-120			1 	20	et seens til Bill Briter
lickel, Dissolved	0.0500	0.0506	0.0486	101	97	80-120			4	20	
Potassium,Dissolved	5.00	5.12	5.20	102	104	80-120			2	20	a Madaadad - C PERCORA
elenium Dissolved	0.0500	0.0513	0.0536	103	107	80-120			4	20	
Gilver,Dissolved	0.0500	0.0532	0.0524	106	105	80-120		www.commune.com	2	20	IS an hera hath i Addan i II Su
odium,Dissolved	5.00	5.15	5,24	103	105	80-120			2	20	
Jranium,Dissolved	0.0500	0.0489	0.0490	98	98	80-120			0	20	ardeter and the first of the fi
Inc.Dissolved	0,0500	0.0495	0.0472	99	94	80-120			5	20	
The fight of the state of the second state											
			•								
.759281-01 Original San	nple (OS) •	Matrix Spike	(MS) • Matri	x Spike Dı	iplicate (M	ISD)					

# L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

OS) 04/23/15 13:38 • (MS) 04/23/15 12:58 • (MSD) 04/23/15 13:00												
	Spike Amoun	t Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	<b>%</b>	<b>%</b>	NOT WE WE WE WE WE WANT OF THE WANT OF	%	Meratori Sustant in statu waanna arabiinda a		%	
Aluminum, Dissolved	1.00	0.0166	5.42	5.65	108	113	5	75-125		en productional general de la COMPANIE	4	20 
Arsenic, Dissolved	0.0100	0.00104	0.0603	0.0628	119	124	5	75-125			4	20
Barium,Dissolved	0.0100	0.0696	0.125	0.121	111	102	5	75-125	ter-ta fan K. C. M. M. K. M. K. M. B.	allen and the second	4 1941 - 1941	20
Boron Dissolved	0.0100	0.116	0.158	0,173	85	113	5	75-125			8	20
Cadmium, Dissolved	0.0100	0.000186	0.0563	0.0596	112	119	5 	75-125	activitation and the second states of the	ne valo dogo zastel	6	20
CalciumDissolved	1.00	685	706	726	146	535	5	75-125	Y	<u>¥</u>	3	20
Chromium, Dissolved	0.0100	ND	0.0516	0.0540	103	108	5	75-125	Condin Hile Salas ania	ni iliya hitha ti chati	5	20
CopperDissolved	0.0100	0.0887	0.0570	0.0586	0	0	5	75-125	<u> 16</u>	<u>J6</u>	3	20
Cobalt, Dissolved	0.0100	ND	0.0544	0.0569	109	114	5 	75-125	erisi protecti		5 1140 - 114	20
Potassium, Dissolved	1,00	5.48	10,9	ft.2	109	114	5	75-125			2	20
Iron,Dissolved	1.00	0.0581	5.34	5.54	106	110	5 	75-125	STREET STREET AND A STREET	u carren de la carre de la carre de	4 6. 2444 (16. ji)	20
Lead,Dissolved	0.Ø10Q	0.000124	0,0538	0.0545	107	109	5	75-125				20
Manganese, Dissolved	0.0100	0.00244	0.0541	0.0579	103	111	5	75-125	Nanta-tanàna 1920-196	n sheki bir kalendar ka sa k	/	20
Molybdenum,Dissolved	0.0100	0.0121	0.0670	Q.0689	110	114	5	75-125			3	20
Nickel,Dissolved	0.0100	0.0175	0.0560	0.0577	77	80	5	75-125	Gant Gan y Print Siler	n he fileri i Cikeline van L. E. Li	3 9-84000	20
Selenium, Dissolved	0.0100	0.00808	0.0630	0.0661	110	116	5	75-125	Mang Bada Ma		5	20
Silver,Dissolved	0.0100	0.000273	0.0569	0.0586	113	117 	5 1 to Commission (2003)	75-125	angererer in sere-	Mala en a de la facta de la	3	20 20
Sadium,Dissolved	1.00	60.0	67.5	68.7	151	175	5	75-12 <b>5</b>	¥	Ā	2	enconder-lettergrades das s
Uranium, Dissolved	0.0100	0.00546	0.0598	0.0614	109	112	5 Finite Constant of Madei	75-125	Januar (1997) (1997)	an an an tao an	3	20
Zinc,Dissolved	0.0100	0,0161	0.0728	0.0720	114	112	5	75-125				20

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## WG782393

# QUALITY CONTROL SUMMARY

Volatile Organic Compounds (GC) by Method 8015D/GRO

ONE LAB, NATIONWID

### Method Blank (MB)

(MB) 04/16/15 13:14				
	MB Result	MB Qualifier MB MDL	MB RDL	1
Analyte	mg/l	mg/l	mg/l	
TPH (GC/FID) Low Fraction	U	0.0314	0.100	ь Б
(S) a,a,a-TrifiucrotoWene(FID)	97.1		62.0-128	

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 10:57 · (LCSD)	04/16/15 11:19			•								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits		
Analyte	mg/l	mg/l	mg/l	%	%	%		e augustaterenens rectarist to successful to the	%	×	It to sense a sense the sense we want the terror course in a second sense when to determ	AN AD ADDRESS OF TAXABLE AND TAXABLE ADDRESS
TPH (GC/FID) Low Fraction	5.50	5.02	5.13	91.3	93.2	67.0-132			2.00	20		
(S) a.a.a-Trifluarotaluene(FID)				98.0	983	62.0-128						

### L757731-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

ACCOUNT

(OS) 04/16/15 13:53 · (MS) 04/16/	15 12:08 • (	MSD) 04/16/15 12:30											Ă
	Spike An	ount Original Result MS Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	L
Analyte	mg/l	mg/l	mg/l	ng/l	%	<b>%</b>		%		20 1-10 10-10-10-10-1-1-1-1-1-1-1-1-1-1-1	%	%	9 SC
TPH (GC/FID) Low Fraction	5.50	ND	5.13	5.44	93.3	98.9	1 ·	50.0-143			5.84	20	50
(S) a,a,a-Tritiuoratoleena(FID)					<b>585</b>	98.9		62.0-128					

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### WG782439 Volatile Organic Compounds (SC/MS) by Method 82608

# QUALITY CONTROL SUMMARY

Method Blank (MB)

ACCOUNT:

(MB) 04/17/15 22:36		MD OuelSteven 14D	MDL MB RDL	
A walk the	MB Result	<u>MB Qualifier</u> MB mg/		
Analyte	mg/l U		100 0.0500	
Acetone Benzene	0		00331 0.0010	a na anna an
Bromodichloromethane	ย		00380 0.0010	
Bromoform	Ö		00469 0.0010	A CONTRACTOR OF
Bromornethane	U		00866 0.005(	Manada har and a state of the
n-Butylbenzene	0.000383		00361 0.0010	
sec-Butylbenzene	U	salahat a salapapan papan p	00365 0.0010	
Carbon disulfide	U	ÖČ	00275 0.0010	
Carbon tetrachloride	U	0.0	00379 0.0010	
Chlorobenzene	0		00348 0.0010	
Chlorodibromomethane	U		00327 0.0010	
Chloroethane	U	LEAL and he is a straight of the second strai	00453 0.005	APAR 19 PETERDAL AND SERVICY PRODUCTION OF PETERDALATIC CONTACT OF A
Chloroform	U		00324 0.005	
Chloromethane	Û		00276 0.002	, "Which do not a new restance of the second document of the second
1,2-Dibromoethane	U		0.0010	
1,1-Dichloroethane	U		00259 0,0010	
1,2-Dichloroethane	U Maria da Maria da Mar		00361 0.0010	
1,1-Dichloroethene	U	President de la companya de la comp	00398 0.0010	SERVEL & B. E. E. E. E. T. T. T. T. F. C.
cis-1,2-Dichloroethene	U		00260 0.0010	
trans 12-Dichloroethene	U	CONTRACTOR CONTRACTOR	00335 0.0010	
1,2-Dichloropropane			00418 0.0010	
trans-1,3-Dichloropropene	U V	Ang the set of the set	000419 0.0010	
Ethylbenzene	t ŭ i ti		00384 0.0010	
2-Hexanone	U	499999945160boodboodbo99950	0382 0.0100	lill Lidding; Frunk
Isopropylbenzene	U	o.	0.001	${f D}$ is the second s
p-isopropyltoluene	U	0.0	000350 0.0010	)
2-Butanone (MEK)	U.	0.0	0.010.0	
Methylene Chloride	U		0.005 0.005	
4-Methyl-2-pentanone (MIBK)	IJ	Õ	0,0100	
Methyl tert-butyl ether	U		000367 0.0010	
Naphthalene	U	1441 Lindebis merenani er ba	0,005	
n-Propylbenzene	U 		0.00349 0.0010	A second s Second second s Second second se Second second s Second second se Second second s Second second seco
Styrene	. Your di	alaber erg tip province a server		
1,1,1,2-Tetrachloroethane	U		0.00385 0.0010 000130 0.0010	
1,1,2,2-Tetrachloroethane	U		000372 0.001	
Tetrachloroethene Toluene	υ		000780 0.005	
1,1,1-Trichloroethane	U	000°°° babararah menungka kana kana kana kana kana kana kana	0.0019 0.0010	
,,,=richoloeulane	0	0.0		-

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### Method Blank (MB)

(MB) 04/17/15 22:36			
	MB Result <u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l	mg/l	
1,1,2-Trichloroethane		0.000383	6.octod
Trichloroethene	U 	0.000398	
1,2,4-Trimethylbenzene	Ο	0.000373	
1,3,5-Trimethylbenzene Vinyl chloride	U	0.000387 0.000259	0.00100 0.00100
Xylenes, Total	U	0.00106	0.00300 0.00100
o-Xylene m&p-Xylenes	U	0.000719	0.00200 88.5-111
(S) ToTrene-d8 (S) Dibromofluoromethane	103 97.4	999)))))) 1991)))	78.3-121
(S) 4-Bromoficorobenzene	102		

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(MB) 04/17/15 22.30												
	MB Result	MB Qualifier	MB MDL	MB RDL								<sup>2</sup> Tc
Analyte	mg/l		mg/l	mg/l	******							ŗ L
1,1,2-Trichloroethane	U	94666666	the state of the second se	0.00100		40,156,049	NG PRASA		PANGUACIÓN.	uh Lingh Lingh Lingh Lingh	pan ny kanalahin periodahan kalan ber	3
Trichloroethene	U	ogonati additi da cara		0.00100	Record PLC	ausia Theorem In	i a la contra de la	sen represidente			active en al a company a	Ss
1,2,4-Trimetbylbenzene	β		0.000373	0.00100								·
1,3,5-Trimethylbenzene	U		0.000387	0.00100				ulla de la composition de la compositio				[ <sup>¶</sup> Cn
Vinyl chloride	U		g da stri tatindri Misie	0.00100		Herby 1999						
Xylenes, Total	U		0.00106	Q.00300							ungen oppende stelle s	⁵Sr
o-Xylene	Ψ.		0,000341	0.00100						003356350600		i Sr
m&p-Xylenes	U		0.00071 <del>9</del>	0.00200	SARAN POD 1994	LIZTER GRAD	1511 ** Harris 1983.4					
(S) Toluene-d8	103			88.5-111					95,249,320	hattiikittiikitti		°QC
(S) Dibromofluoromethane	97.4		reality is a management	78.3-121	100000000000000000000000000000000000000			nus na kati				
(S) 4-Bromoficorobenzene	102			71.0-126							1997-1993 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	7
												΄GΙ
			A 1 1 A									
Laboratory Control San	nple (LCS) •	Laboratory	Control Sa	mple Duplica	te (LCSD)							- <sup>®</sup> Al
(LCS) 04/17/15 21:07 • (LCSD) 04												
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits		9
Analyte	mg/l	mg/l	mg/l	%	%	%	where provide the statest stratest as approximated within the	tas many water share basing to do a plant to constant you constant of the man	*		ana ana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana dia ami	Sc
Acetone	0.125	0.116	0.114	92.5	<del>9</del> 1.0	35.6-163			1.60	23.9	nna a sharan a tala 1000 Mara 200	. <b>L</b>
Benzene	0.0250	0.0222	0.0246	88.7	98,4	74.8-121			10:3	20		
Bromodichloromethane	0.0250	0.0223	0.0246	89.3	98.3	75.1-116		· · · · · · · · · · · · · · · · · · ·	9.62	20	waate oo see ee weerste waard wool	:,
Bromoform	0.0250	0.0232	0.0247	93.0	98,6	67,5-130			5.87	20		1
Bromomethane	0.0250	0.0242	0.0274	96.9	109	49.9-162	menter and the second second second		12.2	20	un de composiciones de la composicione de la composicione de la composicione de la composicione de la composici	÷.
n-Butylbenzene	0,0250	0.0242	0.0263	97,0	105	76.2-126			7.95	20		1
sec-Butylbenzene	0.0250	0.0237	0.0261	95.0	105	74.4-127			9.58	20	tas meneral a companya ina dia	
Carbon disulfide	0.0250	0.0232	0.0258	92.9	103	64.6-140			10,5	20		- 1
Carbon tetrachloride	0.0250	0.0196	0.0224	78.2	89.7	70.2-123			13.7	20	and was free the second description of the s	
Chlarobenzene	0.0250	0.0236	0.0261	94.6	104	78,1-119			9.95	20		, L
Chlorodibromomethane	0.0250	0.0223	0.0240	89.3	96.0	74.0-121			7.20	20	• • • • • • • • • • • • • • • • • • •	rr
Chloroethane	0.0250	0,0223	0.0249	89.1	99.7	61.7-135			11,2	20		
Chloroform	0.0250	0.0222	0.0244	88.8	97.6	76.0-121			9.46	20	ner - Spracht werden die gescher state	:
Chloromethane	0.0250	0,0219	0.0240	87.5	95.9	61.5-129			9.19	20		-1.
1,2-Dibromoethane	0.0250	0.0229	0.0243	91.7	97.1	76.6-121			5.71	20	White condition is a defined with the second state	1
11-Dichloroethane	0.0250	0.0230	0.0255	91.8	102	70,7-126			10,5	20		-9 10-
1,2-Dichloroethane	0.0250	0.0219	0.0230	87.4	92.0	68.8-124			5,13	20		
1,2-Dichloroethene	0.0250	0,0236	0.0267	94,3	107	67.8-129			12:6	20		
cis-1,2-Dichloroethene	0.0250	0.0227	0.0248	90.8	99.2	76.0-119	<ul> <li>Second Contraction (17) * 1 (discrete DDF)</li> </ul>		8,85	20	an and a statement of a source of the	0.01
trans-1,2-Dichloroethene	0.0250	0.0235	0.0259	94,2	104	72.6-121			9.57	20		
๚๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							and a second device of the second				
1,2-Dichloropropane	0.0250	0.0231	0.0252	92.4	101	76.5-119			8.62	20		

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Volatile Organic Compounds (GC/M5) by Method 82608

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/17/1	5 21:07	• (LCSD)	04/17/15 21:29

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%		n kana manakan kara sana kana kara kara kara kara kara kara k	%	
cis-1,3-Dichloropropene	0.0250	0.0225	0.0243	90.2	97.4	78,2-120			7.67	20
rans-1,3-Dichloropropene	0.0250	0.0212	0.0228	84.6	91.0	74.3-123		1779 TO THE REPORT OF THE REPORT OF THE REPORT OF THE	7.23	
Ethylbenzene	0.0250	0.0239	0.0269	95.6	108	78.8-122			11.8	20
2-Hexanone	0.125	0,116	0.113	92.9	90.0	65.6-144			3.08	20
soprepylbenzene	0.0250	0.0237	0,0265	95.0	106	78.6-132			11,1	20
o-Isopropyltoluene	0.0250	0.0236	0.0263	94.3	105	74.0-131			10.9	20
2-Butanone (MEK)	0.125	0:103	0.104	82.2	83,6	55.0-149			1.71	20
Methylene Chloride	0.0250	0.0225	0.0240	89.9	95.9	70.3-120			6.45	20
Hethyl-2-pentanone (MIBK)	0.125	0.114	0.116	91.4	92.6	70.5-133			131	20
lethyl tert-butyl ether	0.0250	0.0218	0.0227	87.4	91.0	71.2-126			4.03	20
łaphthalene	0.0250	0.0225	0.0239	90:0	95.7	68,4-128			6,17	20
-Propylbenzene	0.0250	0.0236	0.0264	94.6	105	78.2 <b>-</b> 122			10.9	20
tyrene	0.0250	0.0240	0.0263	95.8	105	80.4-126			9.30	20
1,1,2-Tetrachloroethane	0.0250	0.0234	0.0257	93.6	103	74.2-124			9.14	20
1,2,2-Tetrachloroethane	0.0250	0.0224	0.0240	89.7	95.9	70.7-122			6.64	20
etrachloroethene	0.0250	0.0247	Q.0278	99.0	111	72.6-126			11.8	20
oluene	0.0250	0.0232	0.0252	92.7	101	79,7-116			8.22	20
,1,1-Trichloroethane	0.0250	0.0229	0.0258	91.6	103	73.2-123			11.7	20
1,2-Trichloroethane	0.0250	0.0232	0.0242	92.9	96.7	77.7-118			3.98	20
Trichloroethene	0.0250	0.0244	0.0273	97.4	109	77.7-118			11.3	20
2,4-Trimethylbenzene	0.0250	0.0233	0.0258	93.4	103	75_0-123			10,2	20
3,5-Trimethylbenzene	0.0250	0.0237	0.0261	94.9	104	75.6-124			9.42	20
/inyl chloride	0.0250	0.0240	0.0267	96.0	107	65.9-128			10.8	20
(ylenes, Total	0.0750	0.071 <b>7</b>	0.0795	95.6	106	78.7-121			10.4	20
-Xylene	0.0250	0.0237	0.0263	94,9	105	77.6-122			10.2	2α
n&p-Xylenes	0.0500	0.0480	0.0532	95.9	106	78.8-121			10.4	20
(5) Toluene-CB			d i ka se i a s	102	103	8 <b>8.5-1</b> 11				
(S) Dibromofluoromethane	- Selayor VAP Naroan Indoleti V G	999780785788888888 999780788788888888		95.8	95.4	78.3-121		The second s		• • • • • • • • • • • • • • • • • • •
(S) 4 Bromofluorobenzene	kara otan 19	16. j.	Nocial States	102	101	71.0-125				

# L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

ACCOUNT:

(O5) 04/18/15 02:24 • (MS) 04/17	/15 22:58 • (M	ISD) 04/17/15 23:2	C									
	Spike Amount Original Result		MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/i	%	%		%		NAMESIAN ADDRESS MANDE MADE DE MINISTO DE MANDEDETE (1910-1911)	%	
Acetone	0.125	0.00244	0,0782	0.0873	60.6	67.9	1	10.0-130		ana ana dia mahampina pina na ana ana kao	11.0	27.9
Benzene	0.0250	ND	0.0191	0.0221	763	88,3	1	54.3-133			14.6	20
Bromodichloromethane	0.0250	ND	0.0193	0.0231	77.2	92.3	1	63.9-121			17.8	20

PROJECT:

SDG:

PAGE.

DATE/TIME

ONE LAB, NATIONWIDE

# QUALITY CONTROL SUMMARY

Volatile Organic Compounds (GC/MS) by Method 8260B L759281-01.02

PROJECT:

ONE LAB. NATIONWIDE.

L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 04/18/15 02:24 ·	(MS) 04/17/15 22:58	<ul> <li>(MSD) 04/17/15 23:20</li> </ul>

ACCOUNT.

	Spike Amo	int Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	<sup>2</sup> T
Analyte	mg/l	mg/l	mg/l	mg/l	%	*		%			% 1101.511111	%	
Bromoform	0.0250	ND	0.0190	0.0235	75.9	93.9		59.5-134		<u></u>	21.3	20,5	13
Bromomethane	0.0250	ND	0.0209	0.0244	83.8	97.7	1	41.7-155			15.3	21.9	°S
n-Butylbenzene	0.0250	0.000438	0.0182	0.0220	70.9	85,2	t	62.7-140			19.1	20,3	
sec-Butylbenzene	0.0250	ND	0.0189	0.0223	75.5	89.2	1	62.2-136	and an and a state of the	ge and an getter attraction at a static data at the same of the	16.7	20.3	⁴C
Carbon disulfide	0.0250	ND	Q.0188	0.0217	753	86.8	1	43.3-149			14.2	20.3	
Carbon tetrachloride	0.0250	ND	0.0164	0.0185	65.6	74.0	1	55.7-134	11117.00 (0.000) - 000 (0.000) - 000 (0.000)	an tototali (provinci), 9 69763	12.0	20 11622 Better of C.0000	5
Chidrobenzene	0.0250	ND	0.0196	0.0237	78.4	94,9	1	67.0-125			19,0	20	⁵S
Chlorodibromomethane	0.0250	ND	0.0189	0.0231	75.4	92.5	1	64.3-125	en en son de la companya de la seguina d	e e su companya da s	20.4	20.8	<u> </u>
Chloroethane	0.0250	ND	0.0192	0.0213	76.7	85.2	1	51,5-136			10.5	40	<sup>s</sup> C
Chloroform	0.0250	ND	0.0194	0.0223	77.7	89.2	1	63.0-129		1	13.7	20 #112.4.4.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.	
Chloromethane	0.0250	ND	0.0184	0.0211	73.4	84.3	1.1	42.4-135			13.8	20	7
1,2-Dibromoethane	0.0250	ND	0.0187	0.0233	74.9	93.1	1	67.1-125	THE REPORT OF A	<u>. 13</u>	21.6	20	ľΘ
1,1-Dichloroethane	0.0250	ND	0.0197	0.0228	78,8	91,4	1	58.5-132			14.8	. 20	
1,2-Dichloroethane	0.0250	ND	0.0188	0.0219	75.4	87.5	1	60.0-126		harranda, a h 19 a di 19 a 19	14.9	20	<sup>8</sup> A
1,1-Dichloroethene	0.0250	ND	0.0196	0,0227	78.6	90.7	1	51,1-140			14.4	20,2	
cis-1,2-Dichloroethene	0.0250	ND	0.0193	0.0223	77.3	89.3	1	59.2-129	en anno 14 anns an taoine an ta	e, pre na nativa antica de se conserva fa Rei	14.4	20	
rans-1,2-Dichloroethene	0.0250	ND	0.0196	0.0226	78.3	90.6	1	56.5-129			14.6	20	je s
1,2-Dichloropropane	0.0250	ND	0.0199	0.0231	79.7	92.6	1 	64.2-123		Territori de la construir de la	14.9	20	Ĺ
cis-1,3-Dichlorоргореле	0.0250	ND	0.0195	0.0228	78,1	91,3	1	66.4-125			15.6	20	
trans-1,3-Dichloropropene	0.0250	ND	0.0175	0.0208	69.8	83.4	1	64.1-128	1994 (1997), and a state of the	ananana keri	17.7	20 	
Ethylberizene	0.0250	ND	0.020Q	0.0235	80.Ø	94.1	1	61.4-133			16.2	20	
2-Hexanone	0.125	ND	0.0862	0.104	69.0	83.2	1	43.3-137			18.7	25.5	
Isopropylbenzene	0.0250	ND	D.0192	0.0228	76.7	91.2		66.8-141			17.4	20	
p-lsopropyltoluene	0.0250	ND	0.0187	0.0223	74.6	89.2	1	63.2-139		a energy a standard and a standard	17.9	20.4	
2-Butanone (MEK)	0.125	ND	0.0774	0.0909	61.9	72,7		22.4-138			16.0	27	
Methylene Chloride	0.0250	ND	0.0193	0.0225	77.4	89.9	1	58.1-122			15.0	20	
4-Methyl-2-pentanone (MIBK)	0.125	ND	0.0909	0.106	727	85.1	1	60. <b>8-</b> 140			15.7	251	
Methyl tert-butyl ether	0.0250	ND	0.0191	0.0224	76.2	89.8	1	57.7-134			16.4	20	
Naphthalene	0.0250	0.000609	0.0170	0,0219	65.5	85.2	1	58.0-135			25.4	25,5	
n-Propylbenzene	0.0250	ND	0.0189	0.0227	75.7	90.9	1	65.9-131			18.2	20	:
Stytene	0.0250	ND	0.0198	0.0244	79.3	97.5	1	66,8-133		<u>81</u>	20.5	20	
1,1,1,2-Tetrachloroethane	0.0250	ND	0.0201	0.0239	80.3	95.8	1	64.0-128			17.6	20	
1,1,2,2-Tetrachloroethane	0.0250	ND	0.0192	0.0230	77.0	91.9	1	56.0-132			17.6	22.2	
Tetrachloroethene	0.0250	ND	0.0204	0.0237	81.6	94.8	1	53.0-139	1. 279 (1.277) (1.277) (1.277) (1.277)	an a constant and the second	14.9	20 States Ministria (Normalizado Jali	
Toluene	0,0250	ND	0.0193	0.0226	77.3	90.2	1	61,4-130			15.5	20	
1,1,1-Trichloroethane	0.0250	ND	0.0192	0.0217	76.8	87.0	1	58.7-134			12.5	20	
1,1,2-Trichloroethane	0.0250	ND	0.0195	Ø.0230	78.0	92.1	ſ	66.3-125			16.6	20	
Trichloroethene	0.0250	ND	0.0202	0.0228	80.7	91.4	1	44.1-149		an an an an an taite an taite an an taite an tai	12.4	20	
	e en el la companya de la comp	ND	0.0189	0.0230	75.6	921		57.4-137	andresse Söll försa		19.7	20	

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# L759281-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

		الترتين فالكالة المتستعين ومستجرب ويؤكد الكفاع ومع
(OS) 04/18/15 02:24 · (I	MS) 04/17/15 22:58 + (	MSD) 04/17/15 23:20

ACCOUNT:

(US) U4/18/15 U2:24 • (MS) U4/17/1		nt Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
1,3,5-Trimethylbenzene	0.0250	ND	0.0193	0.0231	77.3	92.4	1	63.6-132			17.7	20.5
Vinyl chloride	0.0250	ND	0.0198	0.0224	79.A	-89.7	1	47.8-137			12,2	20
Xylenes, Total	0.0750	ND	0.0595	0.0708	79.4	94.4	1	63.3-131			17.3	20
o-Xylene	0.0250	ND	0.0198	0.0238	79.1	95.1	1	63.3-130			18.4	20
m&p-Xylenes	0.0500	ND	0.0398	0.0470	79.5	94.0	1	61.7 <b>-1</b> 33			16.7	20
(S) Toluene-d8					103	103		<b>88.5</b> 111				
(S) Dibromofluoromethane					<i>95.3</i>	95.7		78.3-121				
(S) 4-Bromofivorobenzene	1111111111				102	103		71.0-126				

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# WG782628

# QUALITY CONTROL SUMMARY

#### Semi-Volatile Organic Compounds (GC) by Mathod 8015

## ONE LAB. NATIONWIDE

Method Blank (MB)				
(MB) 04/16/15 16:25				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	
C10-C28 Diesel Range	ປ		0.0222	0.100
C28-C40 Oll Range	u		0.0118	C100
(Ś) o-Terphenyl	112			50.0-150

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 16:42 • (LCSD) 0	4/16/15 16:59		·								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	mg/l	mg/l	mg/l	%	%.	%			%	%	
C10-C28 Diesel Range	1.50	1.33	1.34	88.9	89.6	70.0-130			0.780	20 ·	
(S) o-Terphenyl				60.0	65,9	50,0-150					

PROJECT:

SDG:

Ċp Тс Ss Cn Sr s QC <sup>7</sup>Gl 'Al °Sc

DATE/TIME:

#### 

ONE LAB: NATIONWIDE

## Method Blank (MB)

	MB Result	MB Qualifier MB MDL	MB RDL
Analyte	mg/l	mg/l	
PCB 1260	U	0.00012	0.000500
PCB1016	Ú.	0.00010	
PCB 1221	U	0.00007	0 0.000500
PCB 1232	Ľ	0.00074	ο 0.000500 <sup>-</sup>
PCB 1242	U	0.00004	
PCB 1248		0.00008	0 000050C
PCB 1254	u	0.00004	0 0.000500
(S) Decachlorobiptienyl	712		10.0-155
(\$) Tetrachloro-m-xylene	79.7		13.9-137

# Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/20/15 10:17 • (LCSD) 04/2	20/15 10:30												L
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifie	r RPD	RPD Limits		1	8
Analyte	mg/l	mg/l	mg/l	%	%	Ж			%	%		puolistisMoMENEM	Ľ
PCB 1260	0.00250	0.00243	0.00238	97.0	95.1	47.7-149			2.00	28.8	and an and the second	1	9
PCB 1016	0.00250	0.00214	0.00213	85.7	85.3	24.7-128			0,460	34.9			
(S) Decachlarobiphenyl				91.8	87.0	10.0-156							<u>ــــــــــــــــــــــــــــــــــــ</u>
(S) Tetrachicro m-xylene				803	82.3	13:9-137						let b	

PROJECT:

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DATE/TIME:

# QUALITY CONTROL SUMMARY

### Method Blank (MB)

ACCOUNT:

(MB) 04/16/15 23:56					il and
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	mg/l		mg/l		
Acenaphthene	U		0.000316		Ī
Acenaphthylene	U.		0.000309	<b>C.CC100</b>	
Acetophenone	U		0.00271		L
Anthracene	u		0.000291		
Atrazine	U		0.00153		
Benzaldehyde	U		0.00140	O.O.O.	I
Benzo(a)anthracene	U Transfer	ndi Malakata i Kafabila	0.000111		
Benzo(b)fluoranthene	U.		0.0000896		E F
Benzo(k)fluoranthene	U		0.000355	0.00100	1 1 A
Benza(g,h;i)perylene			0.000340	0.00100	
Benzo(a)pyrene Bipheny	U	hili di kalendari ana s	0.000206		Γ
Biphenye Bis(2-chlorethoxy)methane	U U		0.000329		
Bis(2-chloroethyl)ether	U U	i presidente de la compañía de la co	0.00162		
Bis(2-chloroisopropyl)ether	U	y je sene kalatite	0.000445	0.0100	Contraction of the
4-Bromophenyl-phenylether	Ū.		0.000335	OOTOO	1
Caprolactam	U	- 1.5.1 a. 1. 101. 101. 111. 111. 114. 1 a I	0.000583	0.0100	
Carbazole	U	rtitt og han farmalaki kor Nederlari	0.000162	0.0100	
4-Chloroaniline	U		0.000382	0.0100	
2-Chloronaphthalene	U		0.000330	GIOCIOO	
4-Chlorophenyl-phenylether	U		0.000303	0.0100	
Chrysene	0		0.000332	<b>C.CC100</b>	
Dibenz(a,h)anthracene	U	9 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 2	0.000279		
Dibenzofuran	U U		0,000338	C.C100	
3,3-Dichlorobenzidine	U		0.00202		
2,4 Dintrotoluene	0		0.00165	6.0100	
2,6-Dinitrotoluene	U	kinen käällä	0.000279	0.0100	
Huoranthene	U	49,19451,34369,444	0.000310		
Fluorene Hexachlorøbenzene	0		0.000323	0.00100	
Hexachloro-1,3-butadiene	U U	REPORTED FOR FULL	0.000329	0.0100	
Hexachlorocyclopentaciene	u u		0.00233	G.0100	
Hexachloroethane	U	(*************************************	0.000365	0.0100	
Indeno(1,2,3-cd)pyrene	Ü		0,000279	CO100	1
Isophorone	U	an a	0.000272	0.0100	
1-Methylnaphthalene	V		0.000217	00100	
2-Methylnaphthalene	U		0.000311	0.00100	
Naphthalene	0		0,000372	0.0Ctoo	
2-Nitroaniline	U		0.00190	0.0100	

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ONE LAB, NATIONWIDE.

#### WG782361 Semi Volatile Organic Compounds (GC/MS) by Method 8270C

# QUALITY CONTROL SUMMARY

# Method Blank (MB)

ACCOUNT:

(MB) 04/16/15 23:56		<u></u>				and the second
	MB Result	MB Qualifier	MB MDL	MB RDL		2
Analyte	mg/l	20. Stilled for an Ref Advancements of particular and property of the second second	mg/l	mg/l		
3-Nitroaniline	U		0.000308	0.0100		6
4-Nitroaniline	U	un de la deserva de la composición de l	0.000349	0.0100		
Ntrobenzene	U		0.000367	0.0100		
n-Nitrosodiphenylamine	U	noncours dia fiait	0.000304	0.0100	n a boli de se	4
n-Nitrosodi-n-propylamine	U		0.000403	0.0100		L
Phenanthrene	U 		0.000366	0.00100		5
Benzylbutyl phthalate			0.000275	0.00300		
Bis(2-ethylhexyl)phthalate	0.00173 0.000410		0.000709	0.00300		E
Di-n-butyl phthalate Diethyl phthalate	U	riali Eleizenia Eniad	0.000282	0.00300	C. C. Multhannan, "Proton 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
Dimethyl phthalate	Ŭ		0.000283	0.00300		
Di-n-octyl phthalate	0.000388	E CLUPP PROPERTIES	0.000278	0.00300		7
Pyrene	U		0.000330	0.00100		
4-Chloro-3-methylphenol	U		0.000263	0.0100		2
2-Chlorophenol	U.		0.000283	0.0100		
2-Methylphenol	U		0.000312	0.0100		Ē
3&4-Methyl Phenol	U		0.000266	0.0100		
2,4-Dichlorophenol	U	-	0.000284	0.0100		L
2,4-Dimethylphenol	U		0,000624	0.0100		
4,6-Dinitro-2-methylphenol	Ų magas obtinate	nen soor	0.00262	0.0100 0.0100		
2,4-Dinitrophenol	u U		0.00325	0.0100	NARANAN'NY FARANAN'N'NY FARANAN'NA DIGMARANAN'NA DIGMARANAN'NA DIANAN'NA DIANAN'NA DIANAN'NA DIANANAN'NA DIANAN	
2-Nitrophenol 4-Nitrophenol		Essence est et et et et e	0.000320	0.0100		
Pentachlorophenol	U		0.000313	0.00100	97797979797979797977797779777977777777	
Phenol	Ū		0.000334	0.0100		
2,4,5-Trichlorophenol	U	n M (n for a for gran 12 and 12 an for 12 an for 12 an for 12 and 12	0.000236	0.0100		
2,4,6-Trichlarophenol	U		0.000297	0.0100		
(S) Nitrobenzene-d5	65.1			21.8-123	·	
(S) 2-Fluerobiphenyl	77.9			29.5-131		
(S) p-Terphenyl-d14	71.5			29.3-137	ran miser waaren bilan karten arten waarden geregeregeregeregeregere berten beregere werden bilan karten in sek	
(SJ-Phenal-d5	29.8			5.00-70.1		
(S) 2-Fluorophenol	42.8			10.0-77.9	e-entropy and a second structure of the second structure of the second structure of the second structure of the	
(\$) Z,4.6-Tribromophenol	<i>57,2</i>	- 39 : 11 State (1997)		19,2-130		

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ACCOUNT:

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

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Semi Volatile Organic Compounds (SC/MS) by Method 8270C

(MB) 04/17/15 12:52											
	MB Result	MB Qualifier	MB MDL	MB RDL							
Analyte	mg/l		mg/l	mg/l							
1,3,5-Trinitrobenzene	U		0.00132	0.0100							
						<b>、</b>					
Laboratory Control S	ample (LCS) -	Laboratory	Control Sa	ample Duplica	ate (LCSD	)					
(LCS) 04/16/15 23:10 • (LCSD)	04/16/15 23:33										
	Spike Amount		LCSD Resul		LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier		RPD Limits	
Analyte	mg/l	mg/l	mg/l	× .	%	%		and a first sector of the s	%		LTER COLUMN SHORE HIT OF DESCRIPTION
Acenaphthene	0.0250	0.0209	0.0208	83.6	83.0	38.7-109			0.670	21.5	a na sa ang sa
Acenaphthylene	0.0250	0.0206	0.0205	82.3	82.0	36.0-106			0,330	21	
Acetophenone	0.0250	0.0173	0.0168	69.3	67.1	41.6-104	ut. Nahan karakati katika	9000 - 5,696 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6	3.22	24.8	HE REAL PROPERTY IN
Anthracene	0.0250	0.0207	0.0208	82.7	83,1	43.6-113			0.520	18.8	
Atrazine	0.0250	0.0218	0.0212	87.2	84.7	50,0-123	COMBONE de la Crécell		2.98	21.5	
Benzaldehyde	0.0250	0,0258	0.0235	103	94,0	11.7-132			9.31	25.2	
3enzo(a)anthracene	0.0250	0.0216	0.0213	86.5	85.3 Heregenetate	51.2-112	Beersteldendeliker	Hillistetetetetet	1.33	20	e de Generale -
Benzo(b)fluoranthene	0.0250	0.0217	0.0216	86.8	86.3	47.6-111	adan terreta Panak		0.620	20	
Benzo(k)fluoranthene	0.0250	0.0220	0.0201	88.1	80.4	49.4 <b>-</b> 114		este de constant	9.18 1.61		
3enzo(g,h,i)perylene	0.0250	0.0238	0.0234	951	93.6	45.2-117			4.38	20 20	
Benzo(a)pyrene	0.0250	0.0216	0.0207	86.3	82.6 83.2	45.6-106			4.30 0.950	20	
Biphenyl	0.0250	0.0210	0.0208	84.0	() all a fut de la ana re-	38.0-103 37.2-111			0.950 3.11	24.1	
Bis(2-chlorethoxy)methane	0.0250	0.0194	0.0188	77.5 70:3	75.2 <b>71.7</b>	37.2-111 22,6-108	Tenna Andresserici		2,07	27.9	
31s(2-chloroethyl)ether	0.0250	0.0176	0,0179	82.7	81.4	32.9-100	ngalishiga ta shi nga		1.59	25.1	PHE Elsen nation
Bis(2-chloroisopropyl)ether	0.0250	0.0207	0.0204 0.0211	82.7 82.3	84.6	40,7-116			2,72	21	
1-Bromophenyl-phenylether	0.0250	0.0206	0.00540	9 <del>2.9</del> 22.8	21.6	10.0-40.4		5)UF-FD-H-185-64er	5.33	40	lia pinya pula da kit
Caprolactam	0.0250	0.0218	0.00340	22.0 87.2	85.1	49,0-110			2.48	20	
Carbazole 4-Chloroaniline	0.0250	0.0216	0.0175	66 <b>.3</b>	70.1	32.0-104	(*************************************	Hereite des 1997 (1997)	5.45	26.4	Ferrer af en 2000 1000 1000 en en
	0.0250	0.0211	0.0208	84.3	83.1	33.6-105			1.45	23	
4-Chlorophenyl-phenylether	construction of subsections	0.0215	0.0207	85.9	83.0	39.0-113	INN I Spitedalikeiti	a na manana di kacamatan kata da kata Kata da kata da	3.47	20.9	10543BCLCCLDDDD 0153
Chryserie	0.0250	0.0211	0.0203	84.3	81,3	54.6-120			3.67	20	
Dibenz(a,h)anthracene	0.0250	0.0231	0.0228	92.4	91.1	42.8-118	uten hakitati taraket	2007.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	1.36	20	
Dibenzofuran	0.0250	0.0205	0.0206	81.9	82,3	42.4-105			0.480	20	
3,3-Dichlorobenzidine	0.0250	0.0228	0.0225	<del>9</del> 1.3	90.0	27.2-142		1. 1 ° 1. 1 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1	1.48	22.3	
2,4-Dinitrotoluene	0.0250	0.0210	0.0216	84.1	86,4	31,2-105			2.69	22	
2,6-Dinitrotoluene	0.0250	0.0221	0.0208	88.4	83.3	30.6-106			5.84	23.1	
Fluoranthene	0.0250	0.0208	0.0208	83.3	83.4	45,9-115			0.050	0 20	
Fluorene	0.0250	0.0206	0.0208	82.4	83.2	41.0-112			0.910	20.2	
Hexachlorobenzene	0.0250	0.0207	0.0210	82.9	84,1	38.5-11 <del>6</del>			1.34	20.1	
ing in the set of the provide set of the set	0,0250	0.0176	0.0176	70.3	70.3	16.1-104		·	0.060	0 31.2	

PROJECT:

SDG:

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 04/16/15 23:10 · (LCSD) 04/16/15 23:33

ACCOUNT:

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/i	mg/l	%	%	%		and a star a star of	%	
lexachlorocyclopentadiene	0.0250	0.0124	0.0125	49.5	49.9	10.0-121			0.810	279
lexachloroethane	0.0250	0.0176	0.0166	70.3	66.4	16.5-89.8			5.64	30.7
1deno(1,2,3-cd)pyrene	0.0250	0.0232	0.0233	92.9	931	45.0-116			0.240	20
sophorone	0.0250	0.0204	0.0200	81.6	79.9	35.4-112			2.15	21.5
-Methylnaphthalene	0.0250	0.0216	0.0210	86.2	84,2	34.7-102			2.44	249
2-Methylnaphthaiene	0.0250	0.0191	0.0187	76.4	75.0	33.8-98.6			1.86	24.2
Vaphthalene	0.0250	0.0186	C.0181	74.4	72.6	32.2-101			2.44	23.8
2-Nitroaniline	0.0250	0.0198	0.0202	79.2	80.9	35.6-113			2.16	20.9
3-Nitroaniline	0.0250	0.0195	0.0206	78,1	82.6	33,6-103			5.58	.218
H-Nitroaniline	0.0250	0.0233	0.0227	93.3	91.0	35.4-124			2.49	23.1
Vitrobenzene	0.0250	0.0186	0.0183	74.3	73.3	31.4-106			1,34	25.7
n-Nitrosodiphenylamine	0.0250	0.0211	0.0210	84.3	84.0	44.4-113			0.370	20
-Nitrosodi-n-propylamine	0.0250	0.C191	0.0191	76.5	76.2	33.2-106			0,400	237
Phenanthrene	0.0250	0.0208	0.0210	83.4	84.0	46.4-113			0.720	20
Benzylbutyl phthalate	0.0250	0.0208	C.0210	83.1	83.9	31.8-123			0.980	20.7
Bis(2-ethylhexyl)phthalate	0.0250	0.0230	0.0220	92.2	88.1	36.9-134			4.45	23.6 -
)i-n-butyl phthalate	0.0250	0.0215	0.0215	86.0	85.9	41.8-120			0.200	20.2
Nethyl phthalate	0.0250	0.0221	0.0217	88.4	86.8	36.5-129			1.78	20
)imethyl phthalate	0.0250	0.0219	0.0210	87.5	84,1	35,3-128			3,99	20.8
)i-n-octyl phthalate	0.0250	0.0213	0.0202	85.3	80.9	39.7-112	1912-1914) of the optimization of the second second		5.19	21.1
	0.0250	0.0225	0.0219	89.9	87.5	46:3-117			2,75	20
4-Chloro-3-methylphenol	0.0250	0.0190	0.0194	76.0	77.5	35.7 <b>-</b> 100	the state of the second s		2.02	22.9
2-Chlorophenol	0.0250	Q 0161	0.0166	64.6	66.4	26.2-91.5			2.77	26.5
- Methylphenol	0.0250	0.0158	0.0164	63.2	65.4	26.4-86.9			3.53	26.5
3&4-Methyl Phenol	0.0250	0.0162	0.0170	64.6	67.9	27.9-92.0	dini. Jakin kata hiji di s		4.98	27
2,4-Dichlorophenol	0.0250	0.0193	0.0191	77.3	76.6	31.4-103	1. 71. 1		0.940	24.9
2,4-Dimetrylphenol	0.0250	0.0193	0.0195	77:1	78.1	31.9-107	n ha se		1,32	257
4,6-Dinitro-2-methylphenol	0.0250	0.0200	0.0194	8Q.1	77.8	18.4-148	. N I. L.		2.87	24.4
z,4-Dinitrophenol	0.0250	0.011	0.0107	44,6	42,8	24.2-128	North Contraction of the		4,14	205
2-Nitrophenol	0.0250	0.0181	0.0203	72.4	81.2	25.9-106			11.5	26.9
4-Nitrophenol	0.0250	0.00617	0.00872	24.7	34.9	10.0-52.7			34,2	40
Pentachlorophenol	0.0250	0.0117	0.0133	46.8	53.1	10.0 <b>-97.</b> 4	r targer etti hitti titti titti etti alla 400 al	e propriere dan centra dan dan dan dan Kabupatèn di	12.7	35.1
Phenol	0.0250	0.00847	0.0103	33.9	41.Z	10.0-57.9			19.6	35
2,4,5-Trichlorophenol	0.0250	0.0210	0.0214	83.9	85.5	34.9-112	spatter (trabilitie)	en en la contraction de la Cér	1.94	23.9
2,4,6-Trichlorophenal	0.0250	0.0196	0.0199	78.6	79,5	29.8-107			1,13	24.1
(S) Nitrobenzene-d5			an de la constant de la constant. La constant de la	68.4	70.2	21.8-123	алараанын кыргалар 1990 жылы кыргалар			and and a september of the second
(S) 2-Fluorobiphenyl				81,5	82.0	29.5-131		un de la compañía de	(sdan orig	
(S) p-Terphenyl-d14	gast Apřík 200	195425464444488		73.6	76.6	29.3-137	A CONTRACTOR STOLEN	seseren eta additi 1866 -19	yanır tar. Lidi	аны, алады 91 жыртталатан келекендерекендеректері калысы.
(S) Phenol d5	augen nemerik kom	russe: connectable	a server a concerne server	30.2	36.2	5.00-70.1		uladin testetian	ter a tel USAK	CARATON CONTRACTORS CONTRACT

SDG:

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<sup>2</sup>Tc <sup>3</sup>Ss <sup>4</sup>Cn <sup>5</sup>Sr <sup>7</sup>Gl <sup>8</sup>Al <sup>9</sup>Sc

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DATE/TIME:

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ONE LAB. NATIONWIDE

_aboratory Control Sam LCS) 04/16/15 23:10 • (LCSD) 04/								,			
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	ŔPD	RPD Limits	
Analyte	ng/l	mg/l	mg/i	%	%	%			%	%	
(\$) 2-Fluorophenol				37.8	44.7	10.0-77.9	ridadi enan i 10.31	lakadada Pris dasa	. CC Lo Up di		
(S) 2,4,6-Tribromophenol				753	78.1	N.2-130					0.50,604,000,000,000,000

Ср

<sup>2</sup>Tc <sup>3</sup>Ss <sup>4</sup>Cn

5 Sr

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DATE/TIME:

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Apple additions and	
SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry
	report basis for soils
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate, used to evaluate analytical efficiency by measuring
	recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch GC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is
	low.
01	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

#### Abbreviations and Definitions

# ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

#### State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohlo-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
lowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee 14	2006
Louisiana	A130792	Texas	⊺ 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	VirgInia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05	······································	

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>14</sup> Accreditation not applicable

#### Third Party & Federal Accreditations

ALL			in the second se
A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA-Crypto	TN00003	USDA	S-67674

#### **Our Locations**

ACCOUNT:

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



PROJECT:

SDG:

Company Mine/Address	Billing (aformations		Analysis / Container / Preservative	
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Houston, TX 77043				
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# HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquergue, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

May 13, 2015

Scott Denton Navajo Refining Company P.O. Box 159 Artesia, NM 88211-0159 TEL: (575) 748-3311 FAX

RE: Monthly RO Reject

OrderNo.: 1504C23

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/29/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

**Analytical Report** Lab Order 1504C23

### Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/13/2015

Client Sample ID: Temporary R.O. **CLIENT:** Navajo Refining Company Collection Date: 4/28/2015 8:30:00 AM **Project:** Monthly RO Reject Received Date: 4/29/2015 9:15:00 AM Matrix: AQUEOUS Lab ID: 1504C23-001 DF **Date Analyzed RL** Qual Units Result Analyses Analyst: JME EPA METHOD 8011/504.1; EDB 4/30/2015 5:05:45 PM 1 ND 0.010 μg/L 1.2-Dibromoethane Analyst: SCC EPA METHOD 8082: PCB'S 5/5/2015 3:05:44 PM 1.0 µg/L 1 ND Aroclor 1016 5/5/2015 3:05:44 PM 1 ND 1.0 μg/L Aroclor 1221 5/5/2015 3:05:44 PM 1 ND 1.0 μg/L Aroclor 1232 Aroclor 1242 ND 1.0 µg/L 1 5/5/2015 3:05:44 PM 1 5/5/2015 3:05:44 PM Aroclor 1248 ND 1.0 µg/L ND 1.0 μg/L 1 5/5/2015 3:05:44 PM Aroclor 1254 5/5/2015 3:05:44 PM 1 ND 1.0 µg/L Aroclor 1260 5/5/2015 3:05:44 PM 44.5-110 %REC 1 96.4 Surr: Decachlorobiphenyl 5/5/2015 3:05:44 PM 31,8-95.7 S %REC 1 Surr: Tetrachloro-m-xylene 107 EPA METHOD 8015D: DIESEL RANGE Analyst: KJH 1 4/29/2015 3:54:05 PM ND 1.0 ma/L **Diesel Range Organics (DRO)** 4/29/2015 3:54:05 PM 1 ND 5.0 mg/L Motor Oil Range Organics (MRO) 4/29/2015 3:54:05 PM 76.5-150 %REC 1 Surr: DNOP 106 Analyst: NSB EPA METHOD 8015D: GASOLINE RANGE 1 5/4/2015 3:32:42 PM ND 0.050 mg/L Gasoline Range Organics (GRO) %REC 5/4/2015 3:32:42 PM 80-120 1 Surr: BFB 94.3 Analyst: SCC EPA METHOD 8310: PAHS 5/5/2015 11:03:03 AM 1 ND 2.0 μg/L Naphthalene 5/5/2015 11:03:03 AM NÐ 2.0 μg/L 1 1-Methylnaphthalene 5/5/2015 11:03:03 AM ND 2.0 µg/L 1 2-Methvinaphthalene ND 0.070 μg/L 1 5/5/2015 11:03:03 AM Benzo(a)pyrene 5/5/2015 11:03:03 AM 1 94.8 30.8-125 %REC Surr: Benzo(e)pyrene Analyst: LGT EPA METHOD 300.0: ANIONS 20 4/29/2015 3:12:59 PM 2.9 2.0 mg/L Fluoride 4/29/2015 3:12:59 PM 20 52 10 mg/L Chloride 20 4/29/2015 3:12:59 PM 2.0 Nitrogen, Nitrate (As N) 2.1 mg/L 5/6/2015 12:47:21 AM 1500 50 mg/L 100 Sulfate Analyst: JLF EPA METHOD 200.7: DISSOLVED METALS 4/29/2015 6:12:35 PM 1 ND 0.020 mg/L Aluminum 4/29/2015 6:12:35 PM 1 0.062 0.0020 mg/L Barium 4/29/2015 6:12:35 PM 1 0.10 0.040 mg/L Boron 4/30/2015 1:03:21 PM 0.0020 1 ND mg/L Cadmium 4/29/2015 6:12:35 PM 1 Chromium ND 0.0060 mg/L 4/29/2015 6:12:35 PM 1

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

0.0060

ND

\* Value exceeds Maximum Contaminant Level. **Oualifiers:** 

Cobalt

- Value above quantitation range Е
- I Analyte detected below quantitation limits
- Ο RSD is greater than RSDiimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND Page 1 of 19
- Sample pH Not In Range Ρ

mg/L

RL Reporting Detection Limit

Analytical Report

## Hall Environmental Analysis Laboratory, Inc.

Lab Order 1504C23 Date Reported: 5/13/2015

CLIENT: Navajo Refining Company Project: Monthly RO Reject Lab ID: 1504C23-001	Client Sample ID: Temporary R.O.Collection Date: 4/28/2015 8:30:00 AMMatrix: AQUEOUSReceived Date: 4/29/2015 9:15:00 AM							
Analyses	Result		ual Units	DF	Date Analyzed			
EPA METHOD 200.7: DISSOLVED MET	ALS				Analyst: JLF			
Copper	ND	0.0060	mg/L	1	4/29/2015 6:12:35 PM			
Iron	ND	0.020	mg/L	1	4/29/2015 6:12:35 PM			
Manganese	ND	0.0020	mg/L	1	4/29/2015 6:12:35 PM			
Molybdenum	ND	0.0080	mg/L	1	4/30/2015 1:03:21 PM			
Nickel	ND	0.010	mg/L	1	4/29/2015 6:12:35 PM			
Silver	ND	0.0050	mg/L	1	4/30/2015 1:03:21 PM			
Zinc	0.11	0.010	mg/L	1	4/29/2015 6:12:35 PM			
EPA 200.8; DISSOLVED METALS					Analyst: DBD			
Arsenic	ND	0.0050	mg/L	5	5/7/2015 2:26:28 PM			
Lead	ND	0.0010	mg/L	1	5/5/2015 11:01:02 AM			
Selenium	0.0088	0.0010	mg/L	1	5/5/2015 11:01:02 AM			
Uranium	0.0066	0.0010	mg/L	1	5/5/2015 11:01:02 AM			
EPA METHOD 245.1: MERCURY					Analyst: MED			
Mercury	ND	0.00020	mg/L	1	5/4/2015 2:00:03 PM			
EPA METHOD 8260B: VOLATILES					Analyst: cadg			
Benzene	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
Toluene	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
Ethylbenzene	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
1,2-Dibromoethane (EDB)	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
Carbon Tetrachloride	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
Chloroform	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
1,1-Dichloroethane	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
1,1-Dichloroethene	ND	1.0	μg/L	1	4/29/2015 5:03:52 PM			
Methylene Chloride	ND	3.0	μg/L	1	4/29/2015 5:03:52 PM			
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	4/29/2015 5:03:52 PM			
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
1,1,1-Trichloroethane	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
1,1,2-Trichloroethane	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
Trichloroethene (TCE)	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
Vinyl chloride	ND	1.0	µg/L	1	4/29/2015 5:03:52 PM			
Xylenes, Total	ND	1.5	μg/L	1	4/29/2015 5:03:52 PM			
Surr: 1,2-Dichloroethane-d4	92.3	70-130	%REC	1	4/29/2015 5:03:52 PM			
Surr: 4-Bromofluorobenzene	91.6	70-130	%REC	1	4/29/2015 5:03:52 PM			
Surr: Dibromofluoromethane	98.8	70-130	%REC	1	4/29/2015 5:03:52 PM			
Surr: Toluene-d8	102	70-130	%REC	1	4/29/2015 5:03:52 PM			

#### TOTAL PHENOLICS BY SW-846 9067

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Qualifiers: \* Value exceeds Maximum Contaminant Level.
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - O RSD is greater than RSDlimit
  - R RPD outside accepted recovery limits
  - S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
  - Not Detected at the Reporting Limit Page 2 of 19

Analyst: SCC

P Sample pH Not In Range

ND

RL Reporting Detection Limit

**Analytical Report** Lab Order 1504C23

Date Reported: 5/13/2015

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining CompanyProject: Monthly RO RejectLab ID: 1504C23-001	Matrix:	AQUEOUS		ate: 4/28/2	orary R.O. 015 8:30:00 AM 015 9:15:00 AM
Analyses	Result	RL Qual	Units	DF	Date Analyzed
TOTAL PHENOLICS BY SW-846 9067			· · · · · · · · · · · · · · · · · · ·		Analyst: SCC
Phenolics, Total Recoverable	ND	2.5	µg/L	1	4/30/2015
EPA 335.4: TOTAL CYANIDE SUBBED					Analyst: SUB
Cyanide	ND	0.0100	mg/L	1	5/5/2015
SM4500-H+B: PH					Analyst: JRR
pH	7.92	1.68 H	pH units	1	5/5/2015 5:53:07 PM
SM2540C MOD: TOTAL DISSOLVED SC	LIDS				Analyst: KS
Total Dissolved Solids	3390	20.0 *	mg/L	1	5/1/2015 3:30:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

\*

- Value exceeds Maximum Contaminant Level. Е Value above quantitation range
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND Page 3 of 19
- Sample pH Not In Range Р
- RL Reporting Detection Limit

Analytical Report

Date Reported: 5/13/2015

Lab Order 1504C23

### Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: Trip Blank CLIENT: Navajo Refining Company **Collection Date: Project:** Monthly RO Reject Matrix: TRIP BLANK Received Date: 4/29/2015 9:15:00 AM 1504C23-002 Lab ID: DF **Date Analyzed RL** Qual Units Analyses Result Analyst: JME EPA METHOD 8011/504.1: EDB 1 4/30/2015 5:19:35 PM 0.010 µg/L ND 1,2-Dibromoethane Analyst: cadg EPA METHOD 8260B: VOLATILES 4/29/2015 5:32:34 PM 1 ND 1.0 µg/L Benzene 1 4/29/2015 5:32:34 PM 1.0 µg/L ND Toluene 4/29/2015 5:32:34 PM 1 ND μg/L Ethylbenzene 1.0 4/29/2015 5:32:34 PM ND 1.0 µg/L 1 1,2-Dichloroethane (EDC) 4/29/2015 5:32:34 PM µg/L 1 ND 1.0 1.2-Djbromoethane (EDB) 4/29/2015 5:32:34 PM ND 1.0 µg/L 1 Carbon Tetrachloride 1 4/29/2015 5:32:34 PM 1.0 μg/L ND Chloroform 4/29/2015 5:32:34 PM 1 ND 1.0 μg/L 1.1-Dichloroethane 4/29/2015 5:32:34 PM 1 ND 1.0 μg/L 1,1-Dichloroethene ND 3.0 μg/L 1 4/29/2015 5:32:34 PM Methylene Chloride 4/29/2015 5:32:34 PM 1,1,2,2-Tetrachloroethane ND 2.0 µg/L 1 4/29/2015 5:32:34 PM ND 1.0 µg/L 1 Tetrachloroethene (PCE) 4/29/2015 5:32:34 PM 1 ND 1.0 µg/L 1,1,1-Trichloroethane µg/L 4/29/2015 5:32:34 PM 1 ND 1.0 1,1,2-Trichloroethane 4/29/2015 5:32:34 PM ND 1.0 µg/L 1 Trichloroethene (TCE) μg/L 1 4/29/2015 5:32:34 PM ND 1.0 Vinyl chloride 4/29/2015 5:32:34 PM 1 ND 1.5 µg/L Xylenes, Total 4/29/2015 5:32:34 PM 1 70-130 %REC Surr: 1.2-Dichloroethane-d4 96.6 4/29/2015 5:32:34 PM 70-130 %REC 1 Surr: 4-Bromofluorobenzene 103 4/29/2015 5:32:34 PM 103 70-130 %REC 1 Surr: Dibromofluoromethane 70-130 %REC 1 4/29/2015 5:32:34 PM 104 Surr: Toluene-d8

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Oualifiers:</b>
--------------------

\*

- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

Value exceeds Maximum Contaminant Level.

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Page 4 of 19



## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Pace Project N	1604C23 lo.: 30147056						
	C23-001H Temporary	y Lab ID: 30147	056001 Collected: 04/28/15 08:30	Received:	05/01/15 09:35	Matrix: Water	
R.O. PWS:	н А.	Site ID:	Sample Type:				
Pa	arameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	1.41 ± 0.654 (0.675) C:NA T:80%	pCi/L	05/13/15 10:00	6 13982-63-3	
Radium-228		EPA 904.0	0.441 ± 0.439 (0.877) C:75% T:74%	pCi/L	05/11/15 17:3	1 <b>152</b> 62-20-1	

# REPORT OF LABORATORY ANALYSIS

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Pace Analytical www.pacelabs.com

### QUALITY CONTROL - RADIOCHEMISTRY

Project:	1504C23						
Pace Project No.:	30147056						
QC Batch:	RADC/24384		Analysis Method:	EPA 904.0			
QC Batch Method:	EPA 904.0		Analysis Description:	904.0 <b>Radi</b> u	m 228		
Associated Lab Sar	nples: 30147056001						
METHOD BLANK:	890250		Matrix: Water		<u></u>		
Associated Lab Sar	nples: 30147056001						
Para	neter	Act ±	Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-228	0.4	37 ± 0.426	(0.869) C:70% T:70%	pCi/L	05/11/15 17:33		

Resulte presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

#### REPORT OF LABORATORY ANALYSIS

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#### QUALITY CONTROL - RADIOCHEMISTRY

Project:	1504C23					
Pace Project No.:	30147056					
QC Batch: QC Batch Method; Associated Lab Sar	RADC/24322 EPA 903,1 nples: 30147056001	Analysis Method: Analysis Description:	EPA 903.1 903.1 Radiu	m-226		
METHOD BLANK:	888781	Matrix: Water				
Associated Lab Sar	mples: 30147056001					
Parar	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	-
Radium-226	0.25	6 ± 0.438 (0.767) C:NA T:98%	pCi/L	05/13/15 09:55		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

#### REPORT OF LABORATORY ANALYSIS

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QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.											
Client: Project:	Navajo Refining C Monthly RO Rejec	- •	y								
Sample ID MB	Samp	Туре: М	IBLK	Tes	tCode: El	PA Method	200.7: Disso	lved Meta	ls		
Client ID: PBW	Bato	h ID: R	25851	F	RunNo: 2	5851					
Prep Date:	Analysis I	Date: 4	\$/29/2015	S	SeqNo: 7	66029	Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Aluminum	ND	0.020	)					· · · · · · · · · · · · ·			
Barium	ND	0.0020	)								
Boron	ND	0.040	) .								
Chromium	ND	0.0060	)								
Cobalt	ND	0.0060	)								
Copper	ND	0.0060	)								
Iron	ND	0.020	)								
Manganese	ND	0.0020	)								

Sample ID LCS	SampType: LCS	Tes	tCode: EPA Method	200.7: Dissolved Me	tals	· · · · · · · · · · · · · · · · · · ·
Client ID: LCSW	Batch ID: R25851		RunNo: 25851			
Prep Date:	Analysis Date: 4/29/20	15 8	SeqNo: 766030	Units: <b>mg/L</b>		
Analyte	Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit %RPI	D RPDLimit	Qual
Aluminum	0.51 0.020 0	.5000 0	103 85	115		
Barium	0.47 0.0020 0	0.5000 0	93.0 85	115		
Boron	0.49 0.040 0	.5000 0	97.9 85	115		
Chromium	0.48 0.0060 0	0.5000 0	95.5 85	115		
Cobalt	0.47 0.0060 0	.5000 0	94.4 85	115		
Copper	0.47 0.0060 0	.5000 0	94.3 85	115		
Iron	0.47 0.020 0	0.5000 0	94.6 85	115		
Manganese	0.44 0.0020 0	0.5000 0	88.9 85	115		
Nickel	0.48 0.010 0	0.5000 0	96.6 85	115		
Zinc	0.48 0.010 0	0.5000 0	95.6 85	115		
Sample ID MB	SampType: MBLK	Tes	tCode: EPA Method	200.7: Dissolved Me	etals	
Client ID: PBW	Batch ID: R25881	F	RunNo: <b>25881</b>			
Prep Date:	Analysis Date: 4/30/20	15 \$	SeqNo: <b>767040</b>	Units: <b>mg/L</b>		
Analyte	Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit %RP	D RPDLimit	Qual
Cadmium	ND 0.0020					
Molybdenum	ND 0.0080					

#### ND 0.0050

ND

ND

0.010

0.010

#### Qualifiers:

Silver

Nickel

Zinc

- \* Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSD1imit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- в Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- Not Detected at the Reporting Limit ND
- Р Sample pH Not In Range
- RLReporting Detection Limit

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504C23 May-15

# QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#:	1504C23

13-May-15

Client: Project:	Navajo Refining Co Monthly RO Reject	1 2								
Sample ID LCS	SampT	ype: LC	s	Tes	Code: El	PA Method	200.7: Dissol	ved Metal	s	
Client ID: LCSW	Batch	ID: <b>R2</b>	5881	F	tunNo; 2	5881				
Prep Date:	Analysis D	ate: 4/	30/2015	5	ieqNo: 7	67041	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.51	0.0020	0.5000	0	103	85	115			
Molybdenum	0.49	0.0080	0.5000	0	97.4	85	115			
Silver	0.088	0.0050	0.1000	0	87.9	85	115			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

Page 6 of 19

# QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Project:		Navajo Refining Company Monthly RO Reject		
Sample ID	LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Meta	als
Client ID:	LCSW	Batch ID: R25950	RunNo: 25950	
Prep Date:		Analysis Date: 5/5/2015	SeqNo: 769414 Units: mg/L	
Analyte		Result PQL SPK value S	PK Ref Val %REC LowLimit HighLimit	%RPD RPDLimit Qual
Lead		0.024 0.0010 0.02500	0 96.4 85 115	
Selenium		0.024 0.0010 0.02500	0 94.9 85 115	
Uranium		0.025 0.0010 0.02500	0 98.7 85 115	
Sample ID	мв	SampType: MBLK	TestCode: EPA 200.8: Dissolved Met	als
Client ID:	PBW	Batch ID: R25950	RunNo: 25950	
Prep Date:		Analysis Date: 5/5/2015	SeqNo: 769415 Units: mg/L	
Analyte		Result PQL SPK value S	PK Ref Val %REC LowLimit HighLimit	%RPD RPDLimit Qual
Lead		ND 0.0010		
Selenium		ND 0.0010		
Uranium		ND 0.0010	1	
Sample ID	LCS	SampType: LCS	TestCode: EPA 200.8: Dissolved Met	als
Client ID:	LCSW	Batch ID: R26042	RunNo: 26042	
Prep Date:		Analysis Date: 5/7/2015	SeqNo: 772040 Units: mg/L	
Analyte		Result PQL SPK value S	PK Ref Val %REC LowLimit HighLimit	%RPD RPDLimit Qual
Arsenic		0.024 0.0010 0.02500	0 97.4 85 115	
Sample ID	MB	SampType: MBLK	TestCode: EPA 200.8: Dissolved Met	als
Client ID:	PBW	Batch ID: R26042	RunNo: 26042	
Prep Date:		Analysis Date: 5/7/2015	SeqNo: 772041 Units: mg/L	
Analyte		Result PQL SPK value S	SPK Ref Val %REC LowLimit HighLimit	%RPD RPDLimit Qual
Arsenic		ND 0.0010		

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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# QC SUMMARY REPORT

WO#: 1504C23 13-May-15

# Hall Environmental Analysis Laboratory, Inc.

Client: Project:	0	Refining Company ly RO Reject		
Sample ID M		SampType: MBLK	TestCode: EPA Method 245.1: Mercury	
	3W 1/30/2015	Batch ID: 18982 Analysis Date: 5/4/2015	RunNo; <b>25930</b> SeqNo: <b>768647</b> Units: mg/L	
Analyte Mercury		Result PQL SPK val ND 0.00020	ie SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit	Qual
Sample ID LO	CS-18982	SampType: LCS	TestCode: EPA Method 245.1: Mercury	
Client ID: LO	csw	Batch ID: 18982	RunNo: 25930	
Prep Date: 4	/30/2015	Analysis Date: 5/4/2015	SeqNo: 768648 Units: mg/L	
Analyte		Result PQL SPK val	ie SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit	Qual
Mercury		0.0051 0.00020 0.0050	00 0 102 80 120	

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

Page 8 of 19

# QC SUMMARY REPORT

Hall Environmental	Analysis	Laboratory, Inc.	

Client: Project:	Navajo Refining Company Monthly RO Reject								
Sample ID MB	SampType: MBLK		TestCode: I						
Client ID: PBW	Batch ID: R2587	<b>'2</b>	RunNo:	25872					
Prep Date:	Analysis Date: 4/29/2	2015	SeqNo:	766806	Units: mg/L				
Analyte	Result PQL SF	PK value SPK R	Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	ND 0.10	· · · · · · · · · · · · · · · · · · ·							
Chloride	ND 0.50								
Nitrogen, Nitrate (As N	) ND 0.10								
Sample ID LCS	SampType: LC <b>S</b>		TestCode: I						
Client ID: LCSV	V Batch ID: R2587	12	RunNo:	25872					
Prep Date:	Analysis Date: 4/29/	2015	SeqNo:	766807	Units: mg/L				
Analyte	Result PQL SI	PK value SPK R	Ref Val %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Fluoride	0.46 0.10	0.5000	0 92.4	90	110			•	
Chloride	4.5 <b>0</b> .50	5.0 <b>00</b>	0 91.0	90	110				
Nitrogen, Nitrate (As N	) 2.4 0.10	2.500	0 96.2	90	110	*** *			
Sample ID MB	SampType: MBLK	(	TestCode:						
Client ID: PBW	Batch ID: R2599	<b>)</b> 4	RunNo:	25994					
Prep Date:	Analysis Date: 5/5/2	015	SeqNo:	770620	Units: mg/L				
Analyte	Result PQL SI	PK value SPK F	Ref Val %REC	: LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Sulfate	ND 0.50								
Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions						
Client ID: LCS	W Batch ID: R2599	<del>)</del> 4	RunNo:	25994					
Prep Date:	Analysis Date: 5/5/2	015	SeqNo:	770621	Units: mg/L				
Analyte	Result PQL S	PK value SPK F	Ref Val %REC	CowLimit	HighLimit	%RPD	RPDLimit	Qual	
Sulfate	9.7 0.50	10.00	0 97.2	2 90	110				

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#: 1504C23

13-May-15

# **QC SUMMARY REPORT** Hall Environmental Analysis Laboratory, Inc.

WO#:	1504C23
	12 May 15

· ·	Refining Company ly RO Reject		· · · · · · · · · · · · · · · · · · ·				
Sample ID MB-18974	SampType: MBLK	TestCode: EPA Method					
Client ID: PBW	Batch ID: 18974	RunNo: 25898					
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767691	Units: μg/L				
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual		
,2-Dibromoethane	ND 0.010				••		
Sample ID LCS-18974	SampType: LCS	TestCode: EPA Method 8011/504.1: EDB					
Client ID: LCSW	Batch ID: 18974	RunNo: 25898					
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767692	Units: µg/L				
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual		
,2-Dibromoethane	0.11 0.010 0.1000	0 114 70	130				

Qualifiers:

- 尞 Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank в
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- RL Reporting Detection Limit

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13-May-15

-	MMARY vironmenta			aborat	ory, Inc.					WO#:	1504C23 13-May-15
Client: Project:	•	efining Co RO Reject									
Sample ID	MB-18947	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Diese	l Range		
Client ID: PBW		Batch	ID: <b>18</b>	947	F	RunNo: 2	5835				
Prep Date:	4/29/2015	Analysis D	ate: 4/	29/2015	8	SegNo: 7	66304	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPD</b> Limit	Qual
Diesel Range C	rganics (DRO) 9 Organics (MRO)	ND ND 1,1	1.0 5.0	1.000		109	76.5	150			
				1.000		100					
Sample ID	SampType: LCS			Tes							
Client ID:	LCSW	Batch	iD: 18	947	F						
Prep Date:	4/29/2015	Analysis D	ate: 4/	29/2015	ę	SeqNo: 7	66305	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	rganics (DRO)	5.2	1.0	5.000	0	104	60.1	156			
Surr: DNOP		0.57		0.5000		115	76.5	150			
Sample ID	1504C23-001LMS	SampT	уре: М	3	Tes	tCode: E	PA Method	8015D: Diese	Range	· · · · · · · · · · · · · · · · · · ·	
Client ID:	Temporary R.O.	Batch	1 ID: 18	947	RunNo: 25835						
Prep Date:	4/29/2015	Analysis D	ate: 4	29/2015	S	SegNo: 7	56307	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	rganics (DRO)	5.7	1.0	5.000	0	114	75.9	164			
Surr: DNOP		0.61		0.5000		121	76.5	150			
Sample ID	1504C23-001LMS	D SampT	уре: М	SD	Tes	tCode: E	PA Method	8015D: Diese	el Range		
Client ID:	Temporary R.O.	Batch	1 ID: 18	947	F	RunNo: 25835					

Client ID: Temporary R.O.	. Batc	Batch ID: 18947			RunNo: 2	5835				
Prep Date: 4/29/2015	Analysis E	Date: 4/	/29/2015	ę	SegNo: 7	66308	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low <b>Li</b> mit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	111	75.9	164	2.80	22.1	
Surr: DNOP	0.61		0.5000		122	76.5	150	0	0	

#### Qualifiers:

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- $\mathbf{O}$ RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Ĥ
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- RL Reporting Detection Limit

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# QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#:	1504C23
	13-May-15

-	tefining Co RO Reject										
Sample ID 5ML RB	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch	Batch ID: R25939			RunNo: 25939						
Prep Date:	Analysis Date: 5/4/2015			SeqNo: 768862			Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Basoline Range Organics (GRO)	ND	0.050		·							
Sur: BFB	18		20.00		88.4	80	120				
Sample ID - 2.5UG GRO LCS	SampT	ype: LC	s	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch	n ID: R2	25939	RunNo: 25939							
Prep Date:	Analysis D	ate: 5	/4/2015	SeqNo: 768863			Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	92.2	80	120				
Surr: BFB	18		20.00		91.1	80	120				

#### Qualifiers:

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

Hall En	vironmen	tal Analy	ysis L	aborat	ory, Inc.				· · · · · · · · · · · · · · · · · · ·	vv O#,	. 13-May-15
Client: Project:	Ľ	Refining Co y RO Reject	~ -							<u> </u>	
Sample ID	MB-18997	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8082: PCB's			
Client ID:	PBW	Batch	ID: 189	997	F	RunNo: 2	5944				
Prep Date:	5/1/2015	Analysis D	ate: 5/	5/2015	5	SeqNo: 7	69049	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arocior 1016	· · · · · · · · · · · · · · · · · · ·	ND	1.0								
Aroclor 1221		ND	1.0								
Aroclor 1232		ND	1.0								
Aroclor 1242		ND	1.0								
Aroclor 1248		ND	1.0								
Aroclor 1254		ND	1.0								
Aroclor 1260		ND	1.0								
Surr: Decach	lorobiphenyl	2.2		2.500		87.2	44.5	110			
Surr: Tetrach	nloro-m-xylene	2.4		2.500		97.6	31.8	95.7			S
Sample ID	LCS-18997	SampT	ype: LC	S	Tes	tCode: E	PA Method	8082: PCB's			
Client ID:	LCSW	Batch	n ID: <b>18</b>	997	F	Run <b>N</b> o: 2	5944				
Prep Date:	5/1/2015	Analysis D	ate: 5/	5/2015	5	SeqNo: 7	69942	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016		4.9	1.0	5.000	0	98.7	22.6	127			
Aroclor 1260		5.1	1.0	5.000	0	102	20.4	122			
Surr: Decach	nlorobiphenyl	2.9		2.500		114	44.5	110			S
Surr: Tetract	nloro-m-xylene	4.2		2.500		169	31.8	95.7			S
Sample ID	LCSD-18997	SampT	ype: LC	SD	Tes	tCode: E	PA Method	8082: PCB's			
Client ID:	LCSS02	Batcl	1 ID: 18	997	F	RunNo: 2	5944				
Prep Date:	5/1/2015	Analysis E	)ate: 5/	5/2015	:	SeqNo: 7	69944	Units: µg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016		4.6	1.0	5.000	0	93.0	22,6	127	6.03	26.9	
Aroclor 1260		5.3	1.0	5.000	0	107	2 <b>0</b> .4	1 <b>2</b> 2	4.45	29.1	
Surr: Decad	hlorobiphenyl	3.0		2.500		118	44.5	110	0	0	S
Surr: Tetracl	hloro-m-xylene	3.8		2.500		150	31.8	95.7	0	0	S

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

QC SUMMARY REPORT

- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:

1504C23

QC SUMMARY REPORT	
Hall Environmental Analysis Laboratory, I	nc.

WO#:	1504C23
	13-May-15

#### Client: Project:

Navajo Refining Company Monthly RO Reject

Sample ID 100ng Ics	SampT	ype: LC	S	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch ID: <b>R25860</b> Analysis Date: <b>4/29/2015</b>		F	RunNo: 25860						
Prep Date:			5	SeqNo: 766354						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.6	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	108	75.6	144			
Trichloroethene (TCE)	20	1.0	20.00	0	98.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130		1	
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			
Sample ID 5mL rb	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batcl	n ID: R2	5860	F	RunNo: 25860					
Prep Date:	Analysis E	ate: 4/	29/2015	5	SeqNo: 7	66361	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9. <b>7</b>		10.00		96.8	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Sur: Toluene-d8	9.9		10.00		99.2	70	130			

#### Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- ${\bf S} \qquad {\bf Spike \, Recovery \, outside \, accepted \, recovery \, limits}$
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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## QC SUMMARY REPORT

WO#:

1504C23 13-May-15

## Hall Environmental Analysis Laboratory, Inc.

Client:	Navajo Refining Company
Project:	Monthly RO Reject

Sample ID MB-18998 SampType: MBLK TestCode: EPA Method 8310; PAHs										
Client ID: PBW		D: 18		F	RunNo: 2	5938				
Prep Date: 5/1/2015	Analysis D				SeqNo: 7		Units: µg/L			
FIEP Date. Srifz015	•	ale. Di	5/2010	· · · ·	Seques. 7					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	. ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2,0								
Acenaphthylene	ND	2.5								
Acenaphthene	ND	2.0					-			
Fluorene	ND	0.80								
Phenanthrene	ND	0.60								
Anthracene	ND	0.60								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30							r	
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12								
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	14		20.00		71.8	30.8	125			
Sample ID LCS-18998	Samp1	ype: LC	s	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: LCSW	Batc	h ID: 18	998	F	RunNo: 2	25938				
Prep Date: 5/1/2015	Analysis I	)ate: 5/	5/2015	:	SeqNo: 7	69392	Units: µg/L			

Prep Date: 5/1/2015	Analysis I	Date: 5/	5/2015	SeqNo: 769392			Units: µg/L	ts: µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	55	2.0	80.00	0	69.3	41	76.8			
1-Methylnaphthalene	57	2.0	80.20	0	71.0	24.7	81			
2-Methylnaphthalene	56	2.0	80.00	0	70.4	17.4	81.9			
Acenaphthylene	60	2.5	80.20	0	75.4	50.3	77.5			
Acenaphthene	57	2.0	80,00	0	71.8	27.7	81.1			
Fluorene	5.8	0.80	8.020	0	72.8	34.2	75.1			
Phenanthrene	2.9	0.60	4.020	0	72.4	44.6	88.3			
Anthracene	2.9	0.60	4.020	0	72.1	41.9	85.3			
Fluoranthene	6.1	0.30	8.020	0	76.2	40.6	88			
Pyrene	6.6	0.30	8.020	0	82.8	41	86.6			
Benz(a)anthracene	0.62	0.070	0.8020	0	77.3	43.8	86.7			
Chrysene	3.1	0.20	4.020	0	76.9	44.5	80.7			
Benzo(b)fluoranthene	0.81	0.10	1.002	0	80.8	44.3	87.1			
Benzo(k)fluoranthene	0.39	0.070	0.5000	0	78.0	39.9	94.3			

#### Qualifiers:

.

- Value exceeds Maximum Contaminant Level, \*
- Ε Value above quantitation range
- Analyte detected below quantitation limits J
- 0 RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S
- в Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- Р Sample pH Not In Range
- Reporting Detection Limit RL

Client:	Navajo Refining Company

Project: Monthly RO Reject

	·····									
Sample ID LCS-18998	SampT	ype: LC	S	TestCode: EPA Method 8310: PAHs						
Client ID: LCSW Batch ID: 18998			RunNo: 25938							
Prep Date: 5/1/2015	Analysis D	ate: 5/(	5/2015	S	eqNo: 76	<u> 59392</u>	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.39	0.070	0.5020	0	77.7	44	86.5			
Dibenz(a,h)anthracene	0.78	0.12	1.002	0	77.8	48.8	83.6			
Benzo(g,h,i)perylene	0.83	0.12	1.000	0	83.0	43.6	84.5			
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	77.3	49.2	91.1			
Surr: Benzo(e)pyrene	21		20.00		106	30.8	125			
Sample ID LCSD-18998	SampT	ype: LC	SD	Tes	TestCode: EPA Method 8310: PAHs					
Client ID: LCSS02	Batch	1 ID: 18	998	F	RunNo: 2	5938				
Prep Date: 5/1/2015	Analysis D	)ate: 5/	5/2015	8	GeqNo: 7	69393	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val		LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	58	2.0	80.00	0	72.7	41	76.8	4.75	20	
1-Methylnaphthalene	60	2.0	80.20	0	74.4	24.7	81	4.68	20	
2-Methylnaphthalene	59	2.0	80.00	0	73.8	17.4	81.9	4.70	20	
Acenaphthylene	63	2.5	80.20	0	78.7	50.3	77.5	4.29	20	S
Acenaphthene	60	2.0	80.00	0	74.9	27.7	81.1	4.26	20	_
Fluorene	6.1	0.80	8.020	0	75.7	34.2	75.1	3.86	20	S
Phenanthrene	3.1	0.60	4.020	0	76.1	44.6	88.3	5.03	24	
Anthracene	3.0	0.60	4.020	0	75.9	41.9	<b>8</b> 5.3	5.04	20	
Fluoranthene	6.4	0.30	8.020	0	79.9	40.6	88	4.79	20.9	
Pyrene	7.0	0.30	8.020	0	<b>8</b> 6.8	41	86.6	4.71	20.8	S
Benz(a)anthracene	0.65	0.070	0.8020	0	81.0	43.8	86.7	4.7 <b>2</b>	20	
Chrysene	3.3	0.20	4,020	0	80.8	44.5	80.7	5.05	20	S
Benzo(b)fluoranthene	0.84	0.10	1.002	0	83.8	44.3	87.1	3.64	20.6	
Benzo(k)fluoranthene	0.41	0.070	0.5000	0	82.0	39.9	94.3	5.00	20.8	
Benzo(a)pyrene	0.41	0.070	0.5020	0	81.7	44	86.5	5.00	20	
Dibenz(a,h)anthracene	0.83	0.12	1.002	0	82.8	48.8	83.6	6.21	20	
Benzo(g,h,i)perylene	0.87	0.12	1.000	) 0	87.0	43.6	84.5	4.71	20	S
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	ь о	81.3	49.2	91.1	5.03	20	
Sur: Benzo(e)pyrene	22		20.00	)	112	30.8	125	0		

#### Qualifiers:

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- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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## QC SUMMARY REPORT

WO#: 1504C23 13-May-15

## Hall Environmental Analysis Laboratory, Inc.

	jo Refining Company hly RO Reject			
Sample ID MB-18972 Client ID: PBW	SampType: MBLK Batch ID: 18972	TestCode: Total Pheno RunNo: 25901	lics by SW-846 9067	, <u>, , , , , , , , , , , , , , , , , , </u>
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767792	Units: µg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Phenolics, Total Recoverable	ND 2.5			
Sample ID LCS-18972	SampType: LCS	TestCode: Total Pheno	lics by SW-846 9067	
Client ID: LCSW	Batch ID: 18972	RunNo: 25901		
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767793	Units: µg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Phenolics, Total Recoverable	22 2.5 20.00	0 109 75.7	126	

#### Qualifiers:

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- J Analyte detected below quantitation limits
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- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:	1504C23
	13-Mav-15

	vajo Refining Company nthly RO Reject			
Sample ID MB-R26153 Client ID: PBW	Batch ID: R26153	TestCode: EPA 335.4: T RunNo: 26153		<u></u>
Prep Date: Analyte Cyanide	Analysis Date: 5/5/2015 Result PQL SPK value ND 0.0100	SeqNo: 775896 SPK Ref Val %REC LowLimit	Units: <b>mg/L</b> HighLimit %RPD	RPDLimit Qual
Sample ID LCS-R2615 Client ID: LCSW	3 SampType: LCS Batch ID: R26153	TestCode: EPA 335.4: 1 RunNo: 26153	otal Cyanide Subbed	
Prep Date: Analyte	Analysis Date: <b>5/5/2015</b> Result PQL SPK value	SeqNo: 775897 SPK Ref Val %REC LowLimit	Uni <b>ts: mg/L</b> HighLimit %RPD	RPDLimit Qual
Cyanide	0.500 0.5000	0 100 90	110	

#### Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Navajo Refining Company

Client:

с.		13-May-15

Project: Month	ly RO Reject		
Sample ID MB-18979	SampType: <b>MBLK</b>	TestCode: SM2540C MC	DD: Total Dissolved Solids
Client ID: PBW	Batch ID: 18979	RunNo: 25912	
Prep Date: 4/30/2015	Analysis Date: 5/1/2015	SeqNo: 768004	Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit Qual
Fotal Dissolved Solids	ND 20.0		
Sample ID LCS-18979	SampType: LCS	TestCode: SM2540C MC	DD: Total Dissolved Solids
Client ID: LCSW	Batch ID: 18979	RunNo: 25912	
Prep Date: 4/30/2015	Analysis Date: 5/1/2015	SeqNo: 768005	Units: mg/L
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD RPDLimit Qual
Total Dissolved Solids	999 <b>2</b> 0.0 1000	0 99.9 80	120

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDImit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#: 1504C23

ANALYSIS	ll Euvironmental Analysis Lob 4901 Hant Albrejvergue, Nia 11: 505-345-3975 FAX: 505-34 Website: www.hallemdronmen	787 NE 187109 Samp 5-4107	ble Log-In Cl	neck List
Glight Name: NAVAJO REFINING CO Work	r Order Number: 1504C23		RepiNo:	1
Received by/date: 05 0	tralis	a dada	nengenannen myndrag far wederleinin	nt Al-Marin D. (1997), support provide a state of the state
Logged By: Lindsay Mangin 4/29/2/	16 9:16:00 AM	OH ALO		
Completed By: Lindsay Mangin 4/29/20	15 9:48:07 AM	19-4-Map		•
Teviewod By 05	1/21/15		1	
hain of Custody				
1. Custody seals intact on sample bollles?	Yas 🗔	No 🗌	Not Present 🗹	
2. Is Chain of Custody complete?	Yes 👱	No 🗆	Not Present 🗍	
3. How was the sample delivered?	Courter			
Log In				
4. Was an altempt made to cool the semples?	Yes 📈	No 🗋	na 🗆	
5. Were all samples received at a transferature of $>0^\circ$	0 to 6.0°C Yes 🗹	No CI	ma 🗋	
6. Sample(s) in proper container(s)?	Yes 🗹	No 🗍		
7. Sufficient sample volume for indicated test(s)?	Yes 🗹	No 🗌		
8. Are samples (except VOA and ONG) properly prese	aved? Yes 🗹	No 🗌	-	
9. Was preservative added to bollies?	Yes 🗌	No 🗹	MA []	Samolis - 20:
10, VOA viels have zoro headspace?	Yeg_57	No De	No VOA VIAIS	have labbles.
11. Were any sample containers received broken?.	T tet	No 🗹	# of preserved	
12. Does paperwork match boltle labels? (Note discrepancies on chain of custody)	Yee 🖌	No 🗌	bottles checked for pH	5 μ)γ(2 upless noted)
[3. Are matrices correctly identified on Chain of Custos	iya Yes 🕅	No 🗌	Adjusted?	Ma
4, is it clear what analyses were requested?	Yes 🗹	No 🗌	and the second	20
15. Were all holding times able to be met? (If no, notify customer for autoorization.)	Yes 🗹	No 🗖	Checked by:	
ipecial Handling (if applicable)				
16. Was client notified of all discrepancies with this ord	ei? Yos 🗔	No 🗍	na Ž	sertur_
Person Notified:	Date			
By When	Va: [`] eMali	🗍 Phone 🗍 Fax	ln Person	
Regarding:	erstennet skingen en sen skinget for skinget for			
Ölent Instructions;			an a	aw.co
17. Additional remarks:				
18. <u>Cooler Information</u>	on March 11, March 1990 and an	من کار در میں ۲	1	
a start and a start and a start and a start and a start a start a start and a start a start a start a start a s	ct Seal No Seal Date	Signed By		
1 1.0 Good Yes		· . ·	<b>33</b>	

			stody Record	Turn-Around	Time:	:	• •				HĄ		EN	VI	RO	NN	1EN	ITA		
Client Na	ivajo Rel	ining Co.		X Standard	🗆 Rush	t				1	AN.	al'	YS.	IS	LAI	301	RAT	<b>FOF</b>	۲۶	•• •
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NM 8821	1-0159			Project #: P.C		1			Tel	, 505-	345-3			recirgerenered	5-84E	a sterry river				نفر الم
Phone #:	www.a.	-3311									ning sette Nationalis	Дг	alys	is Re	nues		ange eine Graat	en de la compañía de Compañía de la compañía		
email or F			51	Project Mana	iger:															
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4/28/15	P. W. B.C. & Sciences and			8-40mi VOA	HCL	-02	Ń		See	Attact	ment	1			- 1					<u></u>
4/28/15	8.3DAM			1-500ml P	HNOS	<u>  -a</u>	* <b>5</b> ]											and Monay and	-	<b>_</b>
4/28/15				1-125ml P	HNO3	-03													_	<u> </u>
4/28/15				1-500ml P	NaOH	-0	<b>\$</b> \$1						and and and a							<u></u>
4/28/15				2-11L P	HNO3	-0	<u>)</u>									<u> </u>				<u> </u>
4/28/15				3-40ml VOA	HCL	©														<u> </u>
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If necessary, samples samilised to Hall Environmental may be subcontacted to other accredited technicities. This serves as notice of this possibility. Any sub-contracted data will be clearly instated on the analytical report.

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	LOCE 02 SPA HC		1	1 5 1	2.525			0.025	0.391		0.35		1 it t		0.0025	1 1 1	0.01	0.00244	2 5252	0.001.5	3 0.303	
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# Table 7 - Summary of Groundwater Satipling Analytical Results Fourth Quarter 2013 Fault Report - BO Report Swamper (Series Name) Fault of Comment Andrew Matters June Venue

							Se (continued)		Regular Unit	TANPOTATY UNIT	The second s	
and to prove the Sty			BO Descharge			1 15/20/2015	N14,111	22 6/ 2013	411/211	44 24 <sup>7</sup> 14	Summery Statistics	STATE CALLER
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Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

May 13, 2015

Scott Denton Navajo Refining Company P.O. Box 159 Artesia, NM 88211-0159 TEL: (575) 748-3311 FAX

RE: Monthly RO Reject

OrderNo.: 1504C24

Dear Scott Denton:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/29/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Navajo Refining Company Monthly RO Reject

1504C24-001

**Project:** 

Lab ID:

Date Reported: 5/13/2015

	Client Sample ID: R.O.
	Collection Date: 4/28/2015 8:45:00 AM
Matrix: AQUEOUS	Received Date: 4/29/2015 9:15:00 AM

Analyses	Result	RL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB	·		•	·		Analyst	: JME
1,2-Dibromoethane	ND	0.010		μg/L	1	4/30/2015 5:33:16 PM	18974
EPA METHOD 8082: PCB'S						Analyst	SCC
Aroclor 1016	ND	1.0		μg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1221	ND	1.0		μg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1232	ND	1.0		µg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1242	ND	1.0		µg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1248	ND	1.0		µg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1254	ND	1.0		µg/L	1	5/5/2015 3:50:42 PM	18997
Aroclor 1260	ND	1.0		µg/L	1	5/5/2015 3:50:42 PM	18997
Surr: Decachlorobiphenyl	115	44.5-110	S	%REC	1	5/5/2015 3:50:42 PM	18997
Surr: Tetrachloro-m-xylene	126	31.8-95.7	S	%REC	1	5/5/2015 3:50:42 PM	18997
EPA METHOD 8015D: DIESEL RANG	E					Analyst	: KJH
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/29/2015 4:57:42 PM	18947
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/29/2015 4:57:42 PM	18947
Surr: DNOP	113	76.5-150		%REC	1	4/29/2015 4:57:42 PM	18947
EPA METHOD 8015D: GASOLINE RA	NGE					Analyst	: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	5/4/2015 4:01:53 PM	R2593
Surr: BFB	87.5	80-120		%REC	1	5/4/2015 4:01:53 PM	R2593
EPA METHOD 8310: PAHS						Analyst	: scc
Naphthalene	ND	2.0		µg/L	1	5/5/2015 11:32:18 AM	18998
1-Methylnaphthalene	ND	2.0		µg/L	_1	5/5/2015 11:32:18 AM	18998
2-Methylnaphthalene	ND	2.0		µg/L	1	5/5/2015 11:32:18 AM	18998
Benzo(a)pyrene	ND	0.070		µg/L	1	5/5/2015 11:32:18 AM	18998
Surr: Benzo(e)pyrene	81.0	30.8-125		%REC	1	5/5/2015 11:32:18 AM	18998
EPA METHOD 300.0: ANIONS						Analyst	LGT
Fluoride	2.2	0.10		mg/L	1	4/29/2015 3:25:23 PM	R258
Chloride	37	10		mg/L	20	4/29/2015 4:02:38 PM	R258
Nitrogen, Nitrate (As N)	1.1	0.10		mg/L	1	4/29/2015 3:25:23 PM	R258
Sulfate	1100	25		mg/L	50	5/6/2015 12:59:46 AM	R2599
EPA METHOD 200.7: DISSOLVED MI	ETALS					Analysi	: JLF
Aluminum	ND	0.020		mg/L	1	4/29/2015 6:14:42 PM	R258
Barium	0.041	0.0020		mg/L	1	4/29/2015 6:14:42 PM	R258
Boron	0.089	0.040		mg/L	1	4/29/2015 6:14:42 PM	R258
Cadmium	ND	0.0020		mg/L	1	4/30/2015 1:05:27 PM	R258
Chromium	ND	0.0060		mg/L	1	4/29/2015 6:14:42 PM	R258
Cobalt	ND	0.0060		mg/L	1	4/29/2015 6:14:42 PM	R258

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Value exceeds Maximum Contaminant Level. Qualifiers: \*

- E. Value above quantitation range
  - J Analyte detected below quantitation limits
  - 0 RSD is greater than RSDlimit
  - R RPD outside accepted recovery limits
  - Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank в
- Holding times for preparation or analysis exceeded Н
- Not Detected at the Reporting Limit ND Page 1 of 20
- Р Sample pH Not In Range
- Reporting Detection Limit RĹ

### Hall Environmental Analysis Laboratory, Inc.

Date Reported: 5/13/2015

CLIENT:	Navajo Refining Company			Client Sam	ple ID: R.(	<u>.</u> Э.	
Project:	Monthly RO Reject				•	28/2015 8:45:00 AM	
Lab ID:	1504C24-001	Matrix:	AQUEOUS	S Receive	d Date: 4/2	29/2015 9:15:00 AM	
Analyses		Result	RL	Qual Units	DF	Date Analyzed	Batch
EPA MET	HOD 200.7: DISSOLVED META	ALS				Analyst	JLF
Copper		ND	0.0060	mg/L	1	4/29/2015 6:14:42 PM	R25851
Iron		ND	0.020	mg/L	1	4/29/2015 6:14:42 PM	R25851
Mangane	ese	ND	0.0020	mg/L	1	4/29/2015 6:14:42 PM	R25851
Molybde	num	ND	0.0080	mg/L	1	4/30/2015 1:05:27 PM	R25881
Nickel		ND	0.010	mg/L	1	4/29/2015 6:14:42 PM	R25851
Silver		ND	0,0050	mg/L	1	4/30/2015 1:05:27 PM	R25881
Zinc		0.075	0.010	mg/L	1	4/29/2015 6:14:42 PM	R25851
EPA 200.	8: DISSOLVED METALS					Analyst	DBD
Arsenic		ND	0.0050	mg/L	5	5/7/2015 2:35:40 PM	R26042
Lead		ND	0.0010	mg/L	1	5/5/2015 11:04:05 AM	R25950
Seleniun	ı	0.0053	0.0010	mg/L	1	5/5/2015 11:04:05 AM	R25950
Uranium		0.0042	0.0010	mg/L	1	5/5/2015 11:04:05 AM	R25950
EPA MET	HOD 245.1: MERCURY					Analyst	: MED
Mercury		ND	0.00020	mg/L	1	5/4/2015 2:01:49 PM	18982
EPA MEI	HOD 8260B: VOLATILES					Analyst	: cadg
Benzene	•	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Toluene		ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Ethylben	zene	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,2-Dich	loroethane (EDC)	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,2-Dibro	omoethane (EDB)	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Carbon <sup>-</sup>	Fetrachloride	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Chlorofo	rm	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,1-Dich	loroethane	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,1-Dich	loroethene	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Methyler	1e Chloride	ND	3.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
	ſetrachloroethane	ND	2.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
	oroethene (PCE)	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,1, <b>1</b> -Tri	chloroethane	NÐ	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
1,1,2-Tri	chloroethane	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Trichloro	ethene (TCE)	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Vinyl chi	oride	ND	1.0	µg/L	1	4/29/2015 6:01:15 PM	R25860
Xylenes,	Total	ND	1.5	µg/L	1	4/29/2015 6:01:15 PM	R25860
	1,2-Dichloroethane-d4	89.8	70-130	%REC	1	4/29/2015 6:01:15 PM	R25860
	4-Bromofluorobenzene	99.8	70-130	%REC	1	4/29/2015 6:01:15 PM	R25860
	Dibromofluoromethane	92.8	70-130	%REC	1	4/29/2015 6:01:15 PM	R25860
Surr: `	Toluene-d8	103	70-130	%REC	1	4/29/2015 6:01:15 PM	R25860
TOTAL F	HENOLICS BY SW-846 9067					Analyst	: SCC

#### TOTAL PHENOLICS BY SW-846 9067

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Meth	od Blank
	Е	Value above quantitation range	Н	Holding times for preparation or analysi	s exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	Page 2 of 20
	0	RSD is greater than RSDlimit	Р	Sample pH Not In Range	1 460 2 01 20
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Date Reported: 5/13/2015

5/1/2015 3:30:00 PM

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18979

### Hall Environmental Analysis Laboratory, Inc.

Total Dissolved Solids

CLIENT: Navajo Refining Company Client Sample ID: R.O. Collection Date: 4/28/2015 8:45:00 AM Monthly RO Reject **Project:** Received Date: 4/29/2015 9:15:00 AM Matrix: AQUEOUS Lab ID: 1504C24-001 Batch DF Date Analyzed **RL** Qual Units Result Analyses Analyst: SCC TOTAL PHENOLICS BY SW-846 9067 18972 - ND 2.5 µg/L 1 4/30/2015 Phenolics, Total Recoverable Analyst: SUB EPA 335.4: TOTAL CYANIDE SUBBED R26153 0.0100 1 5/5/2015 Cyanide ND mg/L SM4500-H+B: PH Analyst: JRR 5/5/2015 5:57:25 PM R25990 pН 8.09 1.68 н pH units 1 Analyst: KS SM2540C MOD: TOTAL DISSOLVED SOLIDS

20.0

mg/L

2190

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Meth	od Blank
	Е	Value above quantitation range	Н	Holding times for preparation or analys	is exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	Page 3 of 20
	0	RSD is greater than RSDlimit	Р	Sample pH Not In Range	100000000
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Date Reported: 5/13/2015

#### Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: Trip Blank CLIENT: Navajo Refining Company **Collection Date: Project:** Monthly RO Reject Lab ID: 1504C24-002 Matrix: TRIP BLANK Received Date: 4/29/2015 9:15:00 AM Result **RL** Qual Units **DF** Date Analyzed Batch Analyses Analyst: JME EPA METHOD 8011/504.1: EDB ND 0.010 4/30/2015 5:46:54 PM 18974 1,2-Dibromoethane µg/L 1

EPA METHOD 8260B: VOLATILES	<b>.</b> .				Analyst	cadg
Benzene	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Toluene	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Ethylbenzene	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Carbon Tetrachloride	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Chloroform	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
1,1-Dichloroethane	ND	1.0	μg/L	1	4/29/2015 6:29:57 PM	R25860
1,1-Dichloroethene	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Methylene Chloride	ND	3.0	μg/L	1	4/29/2015 6:29:57 PM	R25860
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
1,1,1-Trichloroethane	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
1,1,2-Trichloroethane	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Trichloroethene (TCE)	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Vinyl chloride	ND	1.0	µg/L	1	4/29/2015 6:29:57 PM	R25860
Xylenes, Total	ND	1.5	µg/L	1	4/29/2015 6:29:57 PM	R25860
Surr: 1,2-Dichloroethane-d4	94.6	70-130	%REC	1	4/29/2015 6:29:57 PM	R25860
Surr: 4-Bromofluorobenzene	104	70-130	%REC	1	4/29/2015 6:29:57 PM	R25860
Surr: Dibromofluoromethane	99.0	70-130	%REC	1	4/29/2015 6:29:57 PM	R25860
Surr: Toluene-d8	98.0	70-130	%REC	1	4/29/2015 6:29:57 PM	R25860

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	в	Analyte detected in the associated Meth	od Blank
	Е	Value above quantitation range	Н	Holding times for preparation or analysi	s exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	Page 4
	0	RSD is greater than RSDlimit	Р	Sample pH Not In Range	1 460 - 1

- Sample pH Not In Range Ч
- S Spike Recovery outside accepted recovery limits

R RPD outside accepted recovery limits

- Page 4 of 20
- RL Reporting Detection Limit

Pace Analytical®

#### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Pace Project No.:	1504C24 30147057							
Sample: 1504C24 PWS:	-001H R.O.	Lab ID: 30147 Site ID:	067001	Collected: 04/28/15 08:45 Sample Type:	Received:	05/01/15 09:35	Matrix: Water	<u>.</u>
Param	eters	Method	Ac	et ± Une (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1		± 0.849 (0.976)	pCi/L	05/13/15 10:0	6 13982-63-3	
Radium-228		EPA 904.0	0.398	3 ± 0.412 (0.851) % T:77%	pCi/L	05/11/15 17:3	1 15262-20-1	

REPORT OF LABORATORY ANALYSIS

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... .

#### QUALITY CONTROL - RADIOCHEMISTRY

Project:	1504C24						
Pace Project No.:	30147057						
QC Batch:	RADC/24384		Analysis Method:	EPA 904.0			
QC Batch Method	EPA 904.0		Analysis Description:	904.0 Radiu	m 228		
Associated Lab Sa	amples: 30147057	001					
METHOD BLANK	890250		Matrix: Water		······································		
Associated Lab Sa	amples: 30147057	001					
Par	ameter	Act ±	Jnc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-228		0.437 ± 0.426	(0.869) C:70% T:70%	pCi/L	05/11/15 17:33		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

#### **REPORT OF LABORATORY ANALYSIS**

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#### QUALITY CONTROL - RADIOCHEMISTRY

Project:	1504C24					
Pace Project No.:	30147057					
QC Batch:	RADC/24322		Analysis Method:	EPA 903.1		
QC Batch Method:	EPA 903.1		Analysis Description:	903.1 Radiu	m-226	
Associated Lab Sam	ples: 30147057001					
METHOD BLANK:	888781		Matrix: Water			
Associated Lab San	nples: 30147057001					
Paran	neter	Act ± (	Jnc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.2	56 ± 0.438	(0.767) C:NA T.98%	pCI/L	05/13/15 09:55	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

#### REPORT OF LABORATORY ANALYSIS

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Client: Project:		Navajo Refining C Monthly RO Rejec				-			*****		
Sample ID	MB	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA Method	200.7: Dissolv	ved Metal	s	
Client ID:	PBW	Bate	ch ID: R2	5851	F	RunNo: 2	25851				
Prep Date:		Analysis	Date: 4/	29/2015	9	eqNo: 7	66029	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		ND	0.020								
Barium		ND	0.0020								
Boron		ND	0.040								
Chromium		ND	0.0060								
Cobalt		ND	0.0060								
Copper		ND	0.0060								
Iron		ND	0.020								
Manganese		ND	0.0020								
Nickel		ND	0.010								
Zinc		ND	0.01 <b>0</b>								
Sample ID	LCS	Samp	Type: LC	s	Tes	tCode: E	PA Method	200.7: Dissol	ved Meta	5	
Client ID:	LCSW	Batr	ch ID: R2	5851	F	RunNo: 2	25851				
Prep Date:			Date: 4/		5	SeqNo: 7	766030	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum		0.51	0.020	0.5000	0	103	85	115			
Barium		0.47	0.0020	0.5000	0	93.0	85	115			
Boron		0.49	0.040	0.5000	0	97.9	85	115			
Chromium		0.48	0.0060	0.5000	0	95.5	85	115			
Cobalt		0.47	0.0060	0.5000	0	94.4	· 85	1 <b>15</b>			
Copper		0.47	0.0060	0.5000	0	94.3	85	115			
Iron		0.47	0.020	0.5000	0	94.6	85	115			
Manganese		0.44	0.0020	0.5000	0	88.9	85	115			
Nickel		0.48	0.010	0.5000	0	96.6	85	115			
Zinc		0.48	0.010	0.5000	0	95.6	85	115			
Sample ID	МВ	Samp	Type: MI	BLK	Tes	tCode: E	EPA Method	200.7: Dissol	ved Meta	ls	
Client ID:	PBW	Bat	ch ID: R2	25881	F	RunNo: 2	25881				
Prep Date:		Analysis	Date: 4	/30/2015	:	SeqNo: 1	767040	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium		ND	0.0020								
Molybdenum		ND	0.0080								
		ND									

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- ${\rm H}^+$  Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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13-May-15

WO#: 1504C24

Client:	Navajo Refining Company
Project:	Monthly RO Reject

Sample ID LCS	SampType: LCS			Tes	TestCode: EPA Method 200.7: Dissolved Metals					
Client ID: LCSW	Bato	h ID: R2	5881	F	RunNo: 2	5881				
Prep Date:	Analysis I	Date: 4/	30/2015	, s	eqNo: 7	67041	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.51	<b>0</b> .0020	0.5000	0	103	85	11 <b>5</b>			
Molybdenum	0.49	0.0080	0.5000	0	97.4	85	115			
Silver	0.088	0,0050	0.1000	0	87.9	85	115			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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### QC SUMMARY REPORT

### Hall Environmental Analysis Laboratory, Inc.

ND

0.0010

Client: Project:		Navajo Refining C Monthly RO Rejec									
Sample ID	LCS	Samp	Type: LC	S	Tes	Code: El	PA 200.8: [	Dissolved Met	als		
Client ID:	LCSW	Bate	h ID: R2	5950	F	unNo: 2	5950				
Prep Date:		Analysis	Date: 5/	5/2015	S	eqNo: 7	69414	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead		0. <b>0</b> 24	0.0010	0.02500	0	96.4	85	115			
Selenium		0.024	0.0010	0.02500	0.	94.9	85	115			
Uranium		0.025	0.001 <b>0</b>	0.02500	0	98.7	85	115			
Sample ID	мв	Samp	Туре: МІ	3LK	Tes	tCode: Ei	PA 200.8: 1	Dissolved Me	tals		
Client ID:	PBW	Bate	h ID: R2	5950	F	RunNo: 2	5950				
Prep Date:		Analysis	Date: 5	5/2015	, S	SeqNo: 7	69415	Units: mg/L	`		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead		ND	0.0010								
Selenium		ND	0.0010								
Uranium		ND	0.0010		·····	<b>.</b>					
Sample ID	LCS	Samp	Type: LC	s	Tes	tCode: E	PA 200.8: [	Dissolved Me	tals		
Client ID:	LCSW	Bat	ch ID: R2	26042	F	RunNo: 2	604 <b>2</b>				
Prep Date:		Analysis	Date: 5	7/2015	5	SeqNo: 7	72040	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%RE <b>C</b>	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic		0.024	0.0010	0.02500	0	97.4	85	115			
Sample ID	мв	Samp	Туре: М	BLK	Tes	tCode: E	PA 200.8: I	Dissolved Me	tals		
Client ID:	PBW	Bat	ch ID: R	26042	F	RunNo: 2	6042				
Prep Date:		Analysis	Date: 5	17/2015	5	SegNo: 7	72041	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic

Qualifiers: \* Valu

Е

- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit

Value above quantitation range

- R RPD outside accepted recovery limits
- ${\bf S} \qquad {\bf Spike \ Recovery \ outside \ accepted \ recovery \ limits}$

Value exceeds Maximum Contaminant Level.

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded

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- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

WO#:	1504C24
	12 10 10

13-May-15

Client: Project:	•	) Refining Company ly RO Reject						
Sample ID	MB-18982	SampType: MBLK	Tes	tCode: EPA Method	245.1: Mercu	ry	-	
Client ID:	PBW	Batch ID: 18982	F	RunNo: <b>25930</b>				
Prep Date:	4/30/2015	Analysis Date: 5/4/201	5 5	SeqNo: 768647	Units: mg/L			
Analyte		Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND 0.00020						
Sample ID	LCS-18982	SampType: LCS	Tes	tCode: EPA Method	245.1: Mercu	ry		
Client ID:	LCSW	Batch ID: 18982	F	RunNo: 25930				
Prep Date:	4/30/2015	Analysis Date: 5/4/201	5 5	SeqNo: 768648	Units: mg/L			
Analyte		Result PQL SPK	value SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0051 0.00020 0.0	05000 0	102 80	120			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDfimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Project:		efining Co RO Reject	mpany								
Sample ID MI	3	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	300.0: Anions	;		
Client ID: PE	BW	Batch	ID: <b>R2</b>	5872	F	RunNo: 2	5872				
Prep Date:		Analysis D	ate: 4/	29/2015	9	SeqNo: 7	66806	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		ND	0.10								
Chloride		ND	0.50								
Nitrogen, Nitrate (A	AS N)	ND	0.10								
Sample ID LC	s	SampT	ype: LC	s	Tes	tCode: E	PA Method	300.0: Anions	•		
Client ID: LC	sw	Batch	ID: R2	5872	F	RunNo: 2	5872				
Prep Da <b>te</b> :		Analysis D	ate: 4/	29/2015	8	SegNo: 7	66807	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		0.46	0.10	0.5000	0	92.4	9 <b>0</b>	110			
Chloride		4.5	0.50	5. <b>000</b>	0'	91.0	90	110			
Nitrogen, Nitrate (A	As N)	2.4	0.10	2.500	0	96.2	90	110			
Sample ID 15	04C24-001EMS	SampT	ype: MS	8	Tes	tCode: E	PA Method	300.0: Anions	5		
Client ID: R.	<b>O</b> .	Batch	ID: <b>R</b> 2	5872	F	RunNo: 2	5872				
Prep Date:		Analysis D	ate: 4/	29/2015	ę	SegNo: 7	66822	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		2.5	0.10	0.5000	2.238	55.2	66.1	113			S
Nitrogen, Nitrate (A	As N)	3.3	0.10	2.500	1.147	86.1	84	109			
Sample ID 15	04C24-001EMS	D SampT	ype: M	SD	Tes	tCode: E	PA Method	300.0: Anions	; ;		
Client ID: R.	0.	Batch	ID: R2	25872	F	RunNo: 2	25872				
Prep Date:		Analysis D	ate: 4	29/2015	5	SeqNo: 7	66823	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride		2.4	<b>0</b> .10	0.5000	2.238	30.4	66.1	113	5.06	20	S
Nitrogen, Nitrate (/	As N)	3.3	0.10	2.500	1. <b>1</b> 47	86.6	84	109	0.363	20	
Sample ID M	B	SampT	ype: Mi	BLK	Tes	tCode: E	PA Method	300.0: Anions	3		
Client ID: P	зw	Batch	ID: R2	25994	F	RunNo: 2	25994				
Prep Date:		Analysis D	ate: 5	/5/2015	ę	SeqNo: 7	70620	Units: mg/L			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate		ND	0.50								

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Client: Project:	Navajo Refining Co Monthly RO Reject	· ·		• .						
Sample ID LCS	SampT	ype: LC	S	Tes	tCode: E	PA Method	300.0: Anion	s		
Client ID: LCSV	Batcl	1 ID: R2	5994	F	RunNo: 2	5994				
Prep Date:	Analysis E	)ate: 5/	5/2015	5	eqNo: 7	70621	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9,7	0.50	10.00	0	97.2	90	110			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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### WO#: 1504C24

13-May-15

WO#: 1504C24 13-May-15

Client: Project:	Navajo Refining C Monthly RO Rejec	1 -								
Sample ID MB-18 Client ID: PBW	Batc	Type: ME h ID: 189	974	F	unNo: 2	5898	8011/504.1: E	DB		
Prep Date: 4/30/	2015 Analysis Result	Date: 4/: PQL		SPK Ref Val	SeqNo: 76 %REC	57691 LowLimit	Units: μg/L HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Sample ID LCS-1	8974 Samp	Type: LC	S	Tes	tCode: El	PA Method	8011/504.1: E	DB		
Client ID: LCSW	Bato	h ID: 189	974	F	RunNo: 2	5898				-
Prep Date: 4/30/	2015 Analysis	Date: 4/3	30/2015	8	SeqNo: 70	67692	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.11	0.010	0.1000	0	114	70	130	<u>.</u>		

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- Ε Value above quantitation range
- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- S Spike Recovery outside accepted recovery limits
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- Ρ Sample pH Not In Range
- Reporting Detection Limit RL

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### QC SUMMARY REPORT

WO#: 1504C24 13-May-15

## Hall Environmental Analysis Laboratory, Inc.

5	Refining Co y RO Reject										
Sample ID MB-18947	SampT	ype: ME	BLK	Tes	tCode: I	EPA	Method	8015D: Diese	Range	<u> </u>	
Client ID: PBW	Batch	n ID: 18	947	F	RunNo:	2583	35				
Prep Date: 4/29/2015	Analysis E	ate: 4/	29/2015	S	SeqNo:	7663	304	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	; г	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0									
votor Oil Range Organics (MRO)	ND	5.0									
Surr: DNOP	1.1		. 1.000		109	)	76.5	150			
Sample ID LCS-18947	SampT	ype: LC	s	Tes	tCode: I	EPA	Method	8015D: Diese	Range		
Client ID: LCSW	Batcl	1D: 18	947	F	RunNo:	2583	35				
Prep Date: 4/29/2015	Analysis E	ate: 4/	29/2015	S	SeqNo:	766:	305	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	; L	owLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.2	1,0	5.000	0	104	ļ	<b>60</b> .1	156			
Surr: DNOP	0.57		0.5000		115	5.	76.5	150			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:	1504C24	
	10.36 14	

13-	May-	15

	efining Co RO Reject									
Sample ID 5ML RB	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: PBW	Batcl	1D: <b>R2</b>	5939	F	RunNo: 2	5939				
Prep Date:	Analysis D	)ate: 5/	4/2015	5	SeqNo: 7	68862	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr; BFB	18		20.00		88.4	80	120			
Sample ID 2.5UG GRO LCS	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID: LCSW	Batcl	n ID: R2	5939	F	RunNo: 2	5939				
Prep Date:	Analysis D	)ate: 5/	4/2015	S	SeqNo: 7	68863	Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Vai	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	92.2	80	120			
Sum BFB	18		20.00		91.1	80	120			

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit

.

- P Sample pH Not In Range
- RL Reporting Detection Limit

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recovery limits

<sup>1 460 15 01 20</sup> 

## QC SUMMARY REPORT

WO#:	1504C24
WO#:	1504C24

13-May-15

### Hall Environmental Analysis Laboratory, Inc.

	Refining Co ly RO Reject									
Sample ID MB-18997	SampT	ype: ME	BLK	Tes	tCode: El	PA Method		·		
Client ID: PBW	Batch	ID: 18	997	F	RunNo: 2	5944				
Prep Date: 5/1/2015	Analysis D	ate: <b>5</b> /	5/2015	5	SeqNo: 7	69049	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low <b>Li</b> mit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	1.0								
Aroclor 1221	ND	1.0								
Aroclor 1232	ND	1.0								
Aroclor 1242	ND	1.0								
Aroclor 1248	ND	1.0								
Aroclor 1254	ND	1.0								
Aroclor 1260	ND	1.0								
Surr: Decachlorobiphenyl	2.2		2.500		87.2	44.5	110			
Surr: Tetrachloro-m-xylene	2.4		2.500		97.6	31.8	95.7			S
Sample ID LCS-18997	SampT	ype: LC	s	Tes	tCode: El	PA Method	8082: PCB's			
Client ID: LCSW	Batch	ID: 18	997	F	RunNo: 2	5944				
Prep Date: 6/1/2015	Analysis D	ate: 5/	5/2015	5	SeqNo: 7	69942	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	4.9	1.0	5.000	0	98.7	22.6	127			
Aroclor 1260	5.1	1.0	5.000	0	102	20.4	122			
Surr: Decachlorobiphenyl	2.9		2.500		114	44.5	<b>1</b> 1 <b>0</b>			S
Surr: Tetrachloro-m-xylene	4.2		2.500		169	31.8	95.7			S
Sample ID LCSD-18997	SampT	ype: LC	SD	Tes	tCode: El	PA Method	8082: PCB's		······	
Client ID: LCSS02	Batch	ID: 18	997	F	RunNo: 2	5944				
Prep Date: 5/1/2015	Analysis D	ate: 5/	5/2015	· · · ·	SeqNo: 7	69944	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	4.6	1.0	5.000	0	93.0	22.6	127	6.03	26.9	
Aroclor 1260	5.3	1.0	5.000	0	107	20.4	122	4.45	29.1	
Surr: Decachlorobiphenyl	3.0		2.500		118	44.5	110	0	0	S
Surr: Tetrachloro-m-xylene	3.8		2.500		150	31.8	95.7	0	0	S

#### Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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Client:	Navajo Refining C	ompany								
Project:	Monthly RO Rejec	t								
		<del>-</del>								
Sample ID 100ng lo		Type: LC					8260B: VOL/	AHLES		
Client ID: LCSW	Bato	ch ID: R2	25860	F	RunNo: 2	5860				
Prep Date:	Analysis	Date: 4	/29/2015	ę	SeqNo: 7	66354	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.6	70	130			
Toluene	20	1.0	20.00	0	98.9	<b>7</b> 0	130			
1,1-Dichloroethene	22	1.0	20.00	0	108	75.6	144			
Trichloroethene (TCE)	· 20	1.0	20.00	0	98.3	70	130			
Surr: 1,2-Dichloroethan	e-d4 9.9		10.00		98.9	70	130			
Surr: 4-Bromofluoroben	zene 10		10.00		103	70	130			
Surr: Dibromofluoromet	hane 10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			
Sample ID 5mL rb	Samp	Туре: М	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Bate	ch ID: R	25860	F	RunNo: 2	5860				
Prep Date:	Analysis	Date: 4	/29/2015	ę	SeqNo: 7	66361	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Vai	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	<u>)</u> ND	1.0								
Carbon Tetrachloride	ND	1.0								
Chloroform	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
Methylene Chloride	ND	3.0								
1,1,2,2-Tetrachloroethane	e ND	2.0								
Tetrachioroethene (PCE)	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethan			10.00		96.8	70	130			
Surr: 4-Bromofluorober			10.00		104	70	130			
Surr: Dibromofluorome			10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

#### Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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#### Client: Navajo Refining Company

Project: Monthly RO Reject

Sample ID MB-18998	SampT	'ype: ME	BLK	Tes	tCode: E	PA Method	8310: PAHs			
Client ID: PBW	Batch	h ID: 18	998	F	RunNo: 2	25938				
Prep Date: 5/1/2015	Analysis E	Date: 5/	5/2015	5	SeqNo: 7	769391	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	2.0								
2-Methylnaphthalene	ND	2.0								
Acenaphthylene	ND.	2.5								
Acenaphthene	ND	2.0								
Fluorene	ND	0.8 <b>0</b>								
Phenanthrene	ND	0.6 <b>0</b>								
Anthracene	ND	0.6 <b>0</b>								
Fluoranthene	ND	0.30								
Pyrene	ND	0.30								
Benz(a)anthracene	ND	0.070								
Chrysene	ND	0.20								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.070								
Benzo(a)pyrene	ND	0.070								
Dibenz(a,h)anthracene	ND	0.12		•						
Benzo(g,h,i)perylene	ND	0.12								
Indeno(1,2,3-cd)pyrene	ND	0.25								
Surr: Benzo(e)pyrene	14		20,00		71.8	30.8	125			

Sample ID LCS-18998	SampT	ype: LC	S	Tes	Code: El	PA Method	8310: PAHs			
Client ID: LCSW	Batcl	n ID: <b>18</b> 9	998	F	tunNo: 2	5938				
Prep Date: 5/1/2015	Analysis D	)ate: 5/	5/2015	5	eqNo: 7	59392	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	55	2.0	80.00	0	69.3	41	76.8			
1-Methylnaphthalene	57	2.0	80.20	0	71.0	24.7	81			
2-Methylnaphthalene	56	2.0	80.00	0	70.4	17.4	81.9			
Acenaphthylene	60	2.5	80.20	0	75.4	50.3	77.5			
Acenaphthene	57	2.0	80.00	0	71.8	27.7	81.1			
Fluorene	5.8	0.80	8.020	0	72.8	34.2	75.1			
Phenanthrene	2.9	0.60	4.020	0	72.4	44.6	88.3			
Anthracene	2.9	0.60	4.020	0	72.1	41.9	85.3			
Fluoranthene	6.1	0.30	8.020	0	76.2	40.6	88			
Pyrene	6.6	0.30	8.020	0	82.8	41	86.6			
Benz(a)anthracene	0.62	0.070	0.8020	0	77.3	43.8	86.7			
Chrysene	3.1	0.20	4.020	0	76.9	44.5	80.7			
Benzo(b)fluoranthene	0.81	0.10	1.002	0	80.8	44.3	87.1			
Benzo(k)fluoranthene	0.39	0.070	0.5000	0	78.0	39.9	94.3			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

E Value above quantitation range

- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R = RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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QC SUN	MMARY REPORT					
Hall Env	ironmental Analysis Laboratory, Inc.					
Client:	Navajo Refining Company					
Project: Monthly RO Reject						

	y KO Kejeu									
Sample ID LCS-18998	SampT	ype: LC	s	Tes	Code: El	PA Method	8310: PAHs			
Client ID: LCSW	Batch	h ID: 189	998	R	unNo: 2	5938				
Prep Date: 5/1/2015	Analysis D	Date: 5/	5/2015	S	eqNo: 7	69392	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	0.39	0.070	0.5020	0	77.7	44	86.5			
Dibenz(a,h)anthracene	0.78	0.12	1.002	0	77.8	48.8	83.6			
Senzo(g,h,i)perylene	0.83	0.12	1.000	0	83.0	43.6	84.5			
ndeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	77.3	49.2	91.1			
Surr: Benzo(e)pyrene	21		20.00		106	30.8	125			
Sample ID LCSD-18998	SampT	Type: LC	SD	Tes	tCode: El	PA Method	8310: PAHs			
Client ID: LCSS02	Batcl	h ID: 189	998	F	RunNo: 2	5938				
Prep Date: 5/1/2015	Analysis E	Date: 5/	5/2015	9	SeqNo: 7	69393	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
laphthalene	58	2.0	80.00	0	72.7	41	76.8	4.75	20	
-Methylnaphthalene	60	2.0	80.20	0	74.4	24.7	81	4.68	20	
2-Methylnaphthalene	59	2.0	80.00	0	73.8	17.4	81.9	4.70	20	
cenaphthylene	63	2.5	80.20	0	78.7	50.3	77.5	4.29	20	S
cenaphthene	60	2.0	80,00	0	74.9	27.7	81.1	4.26	20	
Fluorene	6.1	0.80	8.020	0	75.7	34.2	75.1	3.86	20	S
henanthrene	3.1	0.60	4.020	0	76.1	44.6	88.3	5.03	24	
Anthracene	3.0	0.60	4.020	0	75.9	41.9	85.3	5.04	20	
luoranthene	6.4	0,30	8.020	0	79.9	40,6	88	4.79	20.9	
Pyrene	7.0	0.30	8.020	0	86.8	41	86.6	4.71	20.8	S
Benz(a)anthracene	0,65	0.070	0.8020	0	81.0	43.8	86.7	4.72	20	
Chrysene	3.3	0,20	4.020	0	80.8	44.5	80.7	5.05	20	S
Benzo(b)fluoranthene	0.84	0.10	1.002	0	83.8	44.3	87.1	3.64	20.6	
Benzo(k)fluoranthene	0.41	0.070	0.5000	0	82.0	39.9	94.3	5.00	20.8	
Benzo(a)pyrene	0.41	0.070	0.5020	0	81.7	44	86.5	5.00	20	
Dibenz(a,h)anthracene	0.83	0.12	1.002	0	82.8	48.8	83.6	6.21	20	
Benzo(g,h,i)perylene	0.87	0.12	1.000	0	87.0	43.6	84.5	4.71	20	S
Indeno(1,2,3-cd)pyrene	1.6	0.25	2.004	0	81.3	49.2	91.1	5.03	20	
Surr: Benzo(e)pyrene	22		20.00		112	30.8	125	0		

#### Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:	1504C24
	13.Mm-15

<b>5</b>	o Refining Company ly RO Reject			
Sample ID MB-18972	SampType: MBLK	TestCode: Total Phenol	ics by SW-846 9067	
Client ID: PBW	Batch ID: 18972	RunNo: 25901		
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767792	Units: µg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Pheholics, Total Recoverable	ND 2.5	· · · · · · · · · · · · · · · · · · ·		
Sample ID LCS-18972	SampType: LCS	TestCode: Total Phenol	ics by SW-846 9067	
Client ID: LCSW	Batch ID: 18972	RunNo: 25901		
Prep Date: 4/30/2015	Analysis Date: 4/30/2015	SeqNo: 767793	Units: µg/L	
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qua
Phenolics, Total Recoverable	22 2.5 20.00	0 109 75.7	126	

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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WO#:	1504C24			
	13 May 15			

•	jo Refining Company hly RO Reject				
Sample ID MB-R26153	SampType: MBLK	TestCode: EPA 335.4: 1	otal Cyanide Subbed	<b>.</b>	
Client ID: PBW	Batch ID: R26153	RunNo: 26153			
Prep Date:	Analysis Date: 5/5/2015	SeqNo: 775896	Units: mg/L		÷
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit	Qual
Cyanide	ND 0.0100				
Sample ID LCS-R26153	SampType: LCS	TestCode: EPA 335.4: 1	Fotal Cyanide Subbed		
Client ID: LCSW	Batch ID: R26153	RunNo: 26153			
Prep Date:	Analysis Date: 5/5/2015	SeqNo: 775897	Units: mg/L		
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit % <b>R</b> PD	RPDLimit	Qual
Cyanide	0.500 0.5000	0 100 90	110		

Qualifiers:

٠ Value exceeds Maximum Contaminant Level.

Е Value above quantitation range

- J Analyte detected below quantitation limits
- 0 RSD is greater than RSDlimit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S
- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Η
- Not Detected at the Reporting Limit ND
- Р Sample pH Not In Range
- RĽ Reporting Detection Limit

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13-May-13

Result

999

PQL

20.0

-	o Refining Company Ily RO Reject	
Sample ID MB-18979	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: PBW	Batch ID: 18979	RunNo: 25912
Prep Date: 4/30/2015	Analysis Date: 5/1/2015	SeqNo: <b>768004</b> Units: <b>mg/L</b>
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Total Dissolved Solids	ND 20.0	
Sample ID LCS-18979	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids
Client ID: LCSW	Batch ID: 18979	RunNo: 25912
Prep Date: 4/30/2015	Analysis Date: 5/1/2015	SeqNo: 768005 Units: mg/L

0

%REC

99.9

LowLimit

**8**0

SPK value SPK Ref Val

1000

Analyte Total Dissolved Solids

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level,
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

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RPDLimit

Qual

%RPD

HighLimit

120

AHALYSIS TEL: 303	ronmental Analysis Laban 4901 Howkin Albiquergise, NM 8 -345-3973 FAX: 505-343 e: www.hallenvironmenta	4.005 Samp	ble Log-In Cl	neck List
Cilent Name: NAVAJO REFINING CO Work Orde	Number: 1504C24	1826 (Anno 1899 (Albon a China (Anno 1997)) -	ReplNo:	
Received by/date:	15	97 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 2	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	
logged By: Lindeay Mangin 4/29/2015 9:	15:00 AM	Or yill go		τ.
Completed By: Lindsay Mangin 4/29/2015 10	:14:50 AM	HA		
Reviewed By: Og 04/29	45		androssessessos and an analysis and sold sold sold and any provide sold and	- 
hein of Custody				
1. Custody seals intest on sample bottles?	Yes D	No LI	Not Present	
2. Is Chain of Custody complete?	Yes 🗹	No	Not Present	
3. How was the sample delivered?	Courser			
Log In				4
4. Was an allempt made to cool the camples?	Yes 🗹	No 🗖	NA C	
5. Were all samples received at a temperature of $>0^\circ$ C to 8	0°C Yes 🗹	No 🖸	NA 🗆	
6. Sample(s) in proper contribut(s)?	Yes M	No 🛄		
7. Sufficient sample volume for indicated test(s)?	Yes 🕅	No 🗔		
8. Are samples (except VOA and ONG) properly preserved?	Yes 🗹	No 🗍		
9. Was preservative added to bollles?	Yes 🗔	No 🗹	NA D	
10.voA viala have zero heedspace?	Yes	No De	CS OUL RAILS	(2 of 2) has
11. Were any sample containers received broken?	Yes 🗆	No 😒	# of meserved	
s	http://www.com		bolles checked 🏑	$\leq 1$
<ol> <li>Does pagework match bottle labels? (Note discrepancies on chain of cualody)</li> </ol>	Yes 🕅	No L	for pH:	(12 upless noted)
3. Are matrices correctly identified on Cheln of Custody?	Yee M	No 🗆	Adjusted?	<u>við</u>
14, is it clear what analyses were requested?	Yes 🗹	Na 🗔		es
<ol> <li>Were all holding times able to be met? (If no, notify customer for authorization.)</li> </ol>	Yea	Né 🗌	Chacked by:	
ipecial Handling (if applicable)				
16. Was client notified of all discrepancies with this order?	Yes 🖸	No 🗍	na 🗹	din.
Person Notified:	Date	· · · · · · · · · · · · · · · · · · ·		•
By Whom:	Viak 🗌 eMail 🔲	Phone 🛄 Fax		• •
Regarding.	al montantin dependence and a second a		en franklige sigt of the source of the sourc	
Cliant Instructions:	ander for states in the states are set for adjustic several states are set of more and find		aanaanaan	<u>.</u>
17. Additional remarks:				
18. Cooler Information Cooler No   Temp C   Condition   Seal Intact   St	al No   Soel Dato	Signed By		
1 1.0 Good Yes	······································	Sector Providence		

·			stody Record	Turn-Around	Time:	<u>*************************************</u>				HAI	LE	NV	IRC	) Nr	ME	NT	AL	i.
Client N	avajo Rel	fining Co.		X Standard	🗆 Rus	h				AN/	<b>NLY</b>	SIS	: LA	BO	RA	τc	R	Y
			<b>1822/12/1979/1979/1979</b> /2019/1979/2019/1979/1979/1979/1979/1979/1979/1979/1	Project Name:				www.hallenvironmental.com										
Mailing A	vádress: í	P.O. Box	159 Artesia,	Monthly RO F	leied			490	1 Haw				arque,		109			
NM 8821	1-0159			Project #: P.C				Tel. 505-345-3975 Fax: 505-345-4107										
Phone #:		-3311								ંત્ર કુલ્લાં પુરુષભાષ	Ana	lysis	Reque					
email or Fsx#: 575-746-5451			Project Mana	ger:	<u></u>					··· .			-					
QAVQC Package:														Handler - Andrew				
Standard Level 4 (Full Validation)			Scott Denton	/ Robert Co	mbs													
Accreditation			Sampler, Eliz										·.					
□ NELAP □ Other □ EDD (Type)			Cracio en el como	X, Yes	回 No 2000 20 《之子》													
	(Type)		A A A A A A A A A A A A A A A A A A A	Comple Repu													-	<b>WARTSCORE</b>
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If necessary samples submitted to Hist Environmental may be subcontracted to other accretized laterations. This serves as notice of this presibility. Any sub-contracted data will be clearly outsted on the analytical report.

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# Table 7 - Summary of Groundwater Sampling Analytical Results Fourb Quarter 2015 Final Report, RD Report Destage hards Names Reference Concerns Analyt Believer New Yorks

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# Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]

Sent: Tuesday, June 27, 2006 11:25 AM

To: Chavez, Carl J, EMNRD

Cc: Price, Wayne, EMNRD

Subject: FW: discharge plan

Carl,

Enclosed, please find our renewal notice for our discharge plans for our Lovington and Artesia facilities. Hard copies and filing fees will follow by US Mail. If you have any questions, please call me at 505-746-5281.

60.028

From: Byrd, Jeff Sent: Tuesday, June 27, 2006 11:21 AM To: Moore, Darrell Subject: discharge plan

Jefferson L. Byrd Sr. Environmental Speicialist Navajo Refining - Environmental Department Artesia New Mexico Office - 505-746-5468 Cell - 505-703-5068 District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

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

Revised June 10, 2003

Submit Original Plus 1 Copy to Santa Fe I Copy to Appropriate District Office

#### DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

New Renewal Modification
1. Type:Oil Refinery
2. Operator: Navajo Refining Company
Address: PO Box 159 Artesia, NM 88211
Contact Person: Darrell Moore Phone: 505-746-5281
3. Location:       4       4       4       4       9       Township       17s       Range       26e         Submit large scale topographic map showing exact location.
4. Attach the name, telephone number and address of the landowner of the facility site.
5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.
6. Attach a description of all materials stored or used at the facility.
7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
10. Attach a routine inspection and maintenance plan to ensure permit compliance.
11. Attach a contingency plan for reporting and clean-up of spills or releases.
12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.
13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
14. CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
Name: <u>Darrell Moore</u> Title: Env. Mgr. for Water & Waste
Signature: Dauel Moore Date: 6/27/06
E-mail Address: <u>darrell.moore@navajo~refining.co</u> m

<u>District 1</u> 1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> 1301 W. Grand Avenue, Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Road, Aztee, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

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

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1. Type:Oil Refinery
2. Operator: Navajo Refining Company
Address: PO Box 159 Artesia, NM 88211
Contact Person: Darrell Moore Phone: 505-746-5281
3. Location:/4/4 Section 36Township 16sRange 36e Submit large scale topographic map showing exact location.
4. Attach the name, telephone number and address of the landowner of the facility site.
5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.
6. Attach a description of all materials stored or used at the facility.
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14. CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
Name: <u>Darrell Moore</u> Title: <u>Env. Mgr. for Water &amp; Waste</u>
Signature: Chull Moore Date: 6/27/06
E-mail Address: <u>darrell.moore@navajo-refining.co</u> m



# RIEFINRECONNARY)L.P

AUG 30 2005

FAX (505) 746-5283 DIV. ORDERS (505) 746-5481 TRUCKING (505) 746-5458 PERSONNEL

FAX (505) 746-5419 ACCOUNTING (505) 746-5451 EXEC/MKTG (505) 746-5421 ENGINEERING (505) 746-5480 PIPELINE

Carl J. Chavez, CHMM New Mexico Energy, Minerals & Natural Resources Dept. Oil Conservation Division, Environmental Bureau 1220 South St. Francis Dr., Santa Fe, New Mexico 87505

#### **RE:** Discharge Permit Fees, Artesia and Lovington facilities

Dear Carl

Enclosed, please find two \$100 checks for the filing fees for our discharge permits for our facilities at Artesia and Lovington. These fees cover GW-14 and GW-28.

If you have any questions, please call me at 505-746-5281.

Sincerely, NAVAJO REFINING COMPANY

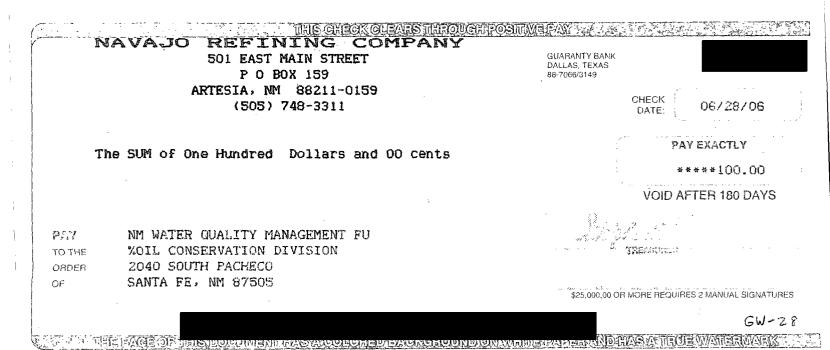
aull Moore

Darrell Moore Environmental Manager for Water and Waste

Encl.

# ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

hereby acknowledge re	eipt of check No dated dated	
or cosh received on	in the amount of \$ 100 00	
	Refueing Co	
GW-28		
Submitted by: _LAW	ener Romano Date. 8/31/06 Paurana Roman Date: 8/51/06	
Submitted to ASD by: 4	Pauren Corren Date: 8/51/00	
Received in ASD by:	Date:	
Filing Fee 🗾 🖌	New Facility Renewal	
Modification	Other	
Organization Code	_521.07 Applicable FY2004	
To be deposited in the V	/ater Quality Management Fund.	
Full Payment	or Annual Increment	



KEVENUE IRANAMILIAL FURM

Description	FUND	CE8	OFA ORG	DEA T	ED ORG	ED ACCT	AMOUNT
CY Reimbursement Project	064	01		· ·			
Gross Receipt Tax	064	01		2329	900000		
Air Quality Title V	092	13	1300	1696	000009	4169134	
	248	14	1400	9696	900000	4969014	
PRP Prepayments	248	14	1400	9696	900000	4969015	
Climax Chemical Co.	248	14	1400	9696	900008		
Circle K Reimbursements	339	27	2700	1698	900000		
Hazardous Waste Permits	339	27	2700	1896	900000		
Hazardous Waste Annual Generator Fees	341	29	2100	2329	900000		20000
Water Quality - Oil Conservation Division		29	2900	1696	900000		
Water Quality - GW Discharge Permit	341		2500	1696	900000		
Air Quality Permits	631	31	2000	2919	900000	2919033	
Payments under Protest	651	33			900000	2349001	
Zerox Copies	652	34		2349		2349002	
Ground Water Penalties	652	34		2349	900000		
Winess Fees	652	34		2349	900000	2439003	
Air Quality Penalties	652	34		2349	900000	2349004	
OSHA Penalties	652	34		2349	800000	2349005	
Prior Year Reimbursement	652	34		2349	900000	2349006	······
Surface Water Quality Certification	652	34		2349	900000	2340009	فليبعث بمير بروسيت المراجع
Jury Duty	662	34		2349	900000	2349012	والمحادث والمح
CY Reimbursements ( I.e. telephone)	652	34		2349	900000	2349014	
UST Owner's List	783	24	2500	9696	900000	4969201	
Hazardous Waste Notifiara List	783	24	2500	9096	800000	4969202	
UST Maps	783	24	2500	9696	800000	4989203	
UST Owner's Update	783	24	2500	9696	900000	4969205	·
Hazardous Weste Regulations	783	24	2500	9696	900000	4959207	
Radiologic Tech. Regulations	783	24	2500	9696	900000	4969208	
Superfund CERLIS List	783	24	2500	9696	900000	4869211	
Solid Waste Permit Fees	783	24	2500	9696	900000	4989213	
Smoking School	783	24	2500	9696	800000	4959214	· · · · · · · · · · · · · · · · · · ·
SWQB - NP5 Publications	783	24	2500	9690	900000	4969222	······
	783	24	2500	8886	800000	4969228	
Radiation Licensing Regulation	783	24	2500	9696	900000	4969301	
Sale of Equipment	783	24	2500	9696	900000	4969302	
Sale of Automobile	783	24	2500	9696	900000	4969614	**** • • • • • • • • • • • • • • • • •
Lust Recoveries	783	24	2500	9696	900000	4969615	
Lust Repayments	783	24	2500	9696	800000	4969801	
Surface Water Publication				9695	800000	4969242	
Exxon Rese Drive Ruidoso - CAF	783	24	2500	1698	900000	4164032	······································
Emerg, Hazardous Waste Penalties NOV	957	32	9600			-	
Radiologic Tech. Certification	987	05	0500	1696	900000	4169005	
Ust Permit Fees	989	20	3100	1696	900000	4169020	
UST Tank Installers Fees	989	20	3100	1696	900000	4169021	
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Date:

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# ACKNOWLEDGEMENT OF RECEIPT OF CHECX/CASH

I hereby acknowledge receipt of check No. dated  $\frac{\partial 8/os/i}{\partial 1}$ or cash received on \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ from REFINING CO. for REFINERY GU Submitted by: WAVNE PRIZE \_\_\_\_ Date:\_\_\_\_ Submitted to ASD by: \_\_\_\_Date: Received in ASD by: \_\_\_\_\_Date:\_\_\_\_ Filing Fee \_\_\_\_ New Facility \_\_\_\_ Renewal Modification \_\_\_\_ Other \_\_\_\_ Organization Code 521.07 Applicable FY 200 To be deposited in the Water Quality Management Fund. Full Payment <u>\_\_\_\_\_</u> or Annual Increment \_\_\_\_\_ THIS CHECK CLEARS THROUGH POSITIVE PAY NAVAJO REFINING COMPANY GUARANTY BANK 501 EAST MAIN STREET - DALLAS, TEXAS P O BOX 159 88-7066/3149 ARTESIA. NM 88211-0159 CHECK (505) 748-3311 08/05/03 DATE: PAY EXACTLY The SUM of Eight Thousand Four Hundred Dollars and OO cents \*\*\*\*8,400.00 VOID AFTER 180 DAYS PAY NM WATER QUALITY MANAGEMENT FU TO THE %OIL CONSERVATION DIVISION ORDER 2040 SOUTH PACHECO OF SANTA FE, NM 87505 \$25,000.00 OR MORE REQUIRES 2 MANUAL SIGNATURES AND HAS A TRUE WATERMARK



# NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT



OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

December 18, 1996

#### CERTIFIED MAIL RETURN RECEIPT NO. P-288-258-883

Mr. Phillip Youngblood Navajo Refining Company P. O. Drawer 159 Artesia, New Mexico 88211-0159

RE: Discharge Plan GW-028 Permit Condition Amendment Artesia Refinery Eddy County, New Mexico

Dear Mr. Youngblood:

Pursuant to the request received from Navajo Refining Company (Navajo), permit conditions 5 and 13 have been amended. Enclosed are two copies of the conditions of approval with the amended conditions. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 10 working days of receipt of this letter.

Please be advised that the amendment of this plan does not relieve Navajo of liability should operations result in pollution of surface water, ground water, or the environment.

The OCD hopes that this has clarified your concern, and we appreciate your input into this process.

Sincerely,

Rogér C. Anderson Environmental Bureau Chief

RCA/mwa

xc: OCD Artesia Office

# ATTACHMENT TO THE DISCHARGE PLAN GW-028 RENEWAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN APPROVAL CONDITIONS (AMENDED) (December 18, 1996)

- 1. <u>Payment of Discharge Plan Fees:</u> The \$50 filing fee is due upon receipt of this approval. The \$3,910 flat fee shall be submitted upon receipt of this approval. The required flat fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the plan, with the first payment due upon receipt of this approval.
- 2. <u>Navajo Commitments:</u> Navajo will abide by all commitments submitted in the discharge plan application dated June 19, 1996.
- 3. <u>Reverse Osmosis Reject Water:</u>
  - A. The discharge of reject water from the reverse osmosis treatment facility to Eagle Draw shall not exceed the following standards:

Constituent	Concentration	Unit
Aluminum	87	ug/l
Arsenic	100	ug/l
Beryllium	18	ug/l
Barium	1000	ug/l
Boron	750	ug/l
Cadmium	10	ug/l
Chlordane	0.015	ug/l
Chlorine	30	ug/l
Chromium	50	ug/l
Cobalt	50	ug/l

Copper	1000	ug/l
Cyanide	18	ug/l
Fluoride	1600	ug/l
Iron	1000	ug/l
Manganese	200	ug/l
Lead	6	ug/l
Mercury	0.042	ug/l
Nickel	200	ug/l
NH3 as N	0.07	ug/l
Radium 226+228	30	pCi/l
Selenium	12	ug/l
Silver	0.4	ug/l
Vanadium	282	ug/l
Zinc	10	mg/l
Sulfate	2661	mg/l
Chloride	275	mg/l
Total Dissolved Solids	4555	mg/l
Chemical Oxygen Demand	125	mg/l
рН	6.6 to 8.6	S.U.

- B. Constituents not listed in A. above for which there are standards established pursuant to WQCC Regulation 3103 will not exceed the set numerical standard in that regulation.
- C. No toxic pollutant listed in WQCC regulation 1101 TT. will be present in the discharge.

- D. SAMPLING: samples of the discharge will be taken and analyzed on the following schedule:
  - i. Major cations/anions and heavy metals will be sampled quarterly.
  - ii. All other constituents will be sampled annually.
  - iii. Analysis for all parameters will be pursuant to EPA approved methods.
  - iv. Sampling and analytical QA/QC records will be retained for all sampling events.
  - v. All samples will be "grab" samples.
  - vi. Discharge flow will be monitored and recorded on a daily basis.
  - vii. Sampling frequency can be reduced, on a parameter by parameter basis, upon application and OCD approval provided all analytical data in the previous year was no greater than seventy-five (75) percent of the effluent limit.
  - viii. All samples collected in a monitoring period will be reported.
  - ix. Sampling and flow measurement will be representative of the volume and nature of the discharge.
  - x. Sample data and analytical results will be reported to the OCD on a quarterly basis and are due prior to the 15th day of the month following the calender quarter. (e.g. 1st quarter results are due prior to April 15th).

# 4. <u>Effluent Pipeline:</u>

- A. Navajo Refining Company will be required to demonstrate integrity of its three-mile long effluent pipeline between the main refinery complex and the disposal ponds by January 1, 1997. Results will be submitted to the OCD by February 14 1997.
- B. Effluent from the pipeline shall be sampled annually where it enters the ponds. Field pH and conductivity shall be measured. Analysis shall include aromatic and halogenated volatile organics, major cations/anions plus fluoride, WQCC metals and PAH's.

#### 5. Product and Waste Disposal:

All recovered product, waste filters or treatment system waste products will be recycled and/or disposed of at an OCD approved facility or in an OCD approved manner. Commercial solid waste from Navajo's offices, warehouses and lunch rooms, which include but is not limited to paper trash, packaging materials, and food scraps along with construction and demolition debris, which include but is not limited to steel, glass, brick, concrete, roofing materials, pipe, wallboard, lumber, rocks, soil, trees and other vegetative matter is approved for disposal at a municipal solid waste facility servicing the area. The disposal of these commercial solid wastes, construction and demolition debris as defined in 20 NMAC 9.1.105.O and T shall not result in a violation of 20 NMAC 9.1.107.C or any other applicable section of the New Mexico solid waste regulations or the New Mexico Oil Conservation Division regulations.

#### 6. Lead Contamination:

A plan and schedule for delineating, testing and disposing of any lead contaminated soil located between tanks 417 and 418 will be submitted to the OCD by February 14, 1997.

- 7. Ground Water and Treatment System Monitoring:
  - A. Ground water from monitor wells, the remediation and the treatment system will be sampled and analyzed according to the following schedule. All water quality sampling will be conducted according to EPA approved protocol and laboratory techniques.

Sampling point	Biweekly	Monthly	Quarterly	Annually
Air Stripper Effluent		601** 602** PAH's		Cations/anions Heavy metals
RA-2723	602**			
RA-4196	······································	602**		
RA-4798		602**		
RA-313*	<u></u>	602**		
RA-314*		602**		
RA-1331*		602**		
RA-307*		602**		
RA-1227*		602**		
RA-3156		l 	602**	

RA-3353	602**	
KWB-1A	601** 602**	PAH's Cation/anions Heavy metals
KWB-1C	601** 602**	PAH's Cation/anions Heavy metals
KWB-2A	601** 602**	PAH's Cation/anions Heavy metals
KWB-3A	601** 602**	PAH's Cation/anions Heavy metals
KWB-7	601** 602**	PAH's Cation/anions Heavy metals
KWB-9	601** 602**	PAH's Cation/anions Heavy metals

\* - Sampled during irrigation season

- EPA laboratory method

- B. An annual report will be submitted to the OCD by February 28 of each year. The annual reports will contain:
  - i. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.
  - ii. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Copies of the most recent years laboratory analytical data sheets will also be submitted
  - iii. A quarterly water table elevation map using the water table elevation of the ground water in all refinery monitor wells.
  - iv. Plots of water table elevation vs. time for each ground water monitoring point.
  - v. A quarterly product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells.

- vi. The volume of product recovered in the remediation/treatment system during each quarter and the total recovered to date.
- vii. The volume of total fluids pumped from all recovery wells and trenches during each quarter and the total volume recovered to date.
- 8. Drum Storage: All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums will be stored on their sides with the bungs in and lined up on a horizontal plane. Chemicals in other containers such as sacks or buckets will also be stored on an impermeable pad and curb type containment. A plan and schedule will be provided to the OCD by February 14, 1997 for properly storing all drums which do not meet OCD requirements.
- 9. <u>Process Areas:</u> All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all process areas which do not meet OCD requirements.
- 10. <u>Above Ground Tanks:</u> All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new facilities or modifications to existing facilities must place the tank on an impermeable type pad within the berm. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all above ground tanks which do not meet OCD requirements.
- 11. <u>Above Ground Saddle Tanks:</u> Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all above ground saddle tanks which do not meet OCD requirements.
- 12. <u>Labeling:</u> All tanks, drums and containers should be clearly labeled to identify their contents and other emergency information necessary if the tank were to rupture, spill, or ignite. A plan and schedule will be provided to the OCD by February 14, 1997 for properly labeling all tanks, drums and containers which do not meet OCD requirements.
- 13. <u>Below Grade Tanks/Sumps:</u> All below grade tanks, sumps, and pits must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design. All pre-existing sumps and below-grade tanks must demonstrate integrity on an annual basis. Integrity tests include pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of

cleaned out tanks and/or sumps, or other OCD approved methods. The OCD will be notified at least 72 hours prior to all testing so that an OCD representative may witness the testing. All required testing will be completed by December 31, 1996. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing, repairing and/or replacing all below grade tanks, sumps, and pits which do not meet OCD requirements.

- 14. <u>Underground Process/Wastewater Lines:</u> All underground process/wastewater pipelines must be tested to demonstrate their mechanical integrity at present and then every 5 years there after, or prior to discharge plan renewal. Permittees may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing so that an OCD representative may witness the testing. All required testing will be completed by December 31, 1996. A plan and schedule will be provided to the OCD by February 14, 1997 for properly repairing and/or replacing all below grade lines for which integrity could not be achieved.
- 15. <u>Class V Wells</u>: Leach fields and other wastewater disposal systems at OCD regulated facilities which inject fluid other than domestic waste sewage below the surface are considered Class V injection wells under the EPA UIC program. All class V wells will be closed unless, it can be demonstrated that protectable groundwater will not be impacted in the reasonably foreseeable future. Class V wells must be closed through the Santa Fe Office. The OCD allows industry to submit closure plans which are protective of human health, environment and groundwater as defined by the WQCC, and are cost effective.

-

16. <u>Housekeeping:</u> All systems designed for spill collection/prevention should be inspected to ensure proper operation and to prevent overtopping or system failure.

Any non-exempt contaminated soils that are collected at the facility will be tested for hazardous constituents, and after receiving OCD approval, will be disposed of at an OCD approved site.

- 17. <u>Spill Reporting:</u> All spills/releases shall be reported pursuant to OCD Rule 116 and WQCC 1203 to the OCD Artesia District Office.
- 18. <u>Transfer of Discharge Plan</u>: The OCD will be notified prior to any transfer of ownership, control, or possession of a facility with an approved discharge plan. A written commitment to comply with the terms and conditions of the previously approved discharge plan must be submitted by the purchaser and approved by the OCD prior to transfer.
- 19. <u>Closure:</u> The OCD will be notified when operations of the facility are discontinued for a period in excess of six months. Prior to closure of the facility a closure plan will be

submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

20. <u>Certification:</u> Navajo, by the officer whose signature appears below, accepts this permit and agrees to comply with all terms and conditions contained herein. Navajo further acknowledges that these conditions and requirements of this permit may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Accepted:

NAVAJO REFINING COMPANY 22/15/F Title 1/7/97

# ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASE

	I hereby acknowledge	recaipt of check No.	dated <u>11/22/9</u>	, 76,
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STATE OF NEW MEXICO

THE STATES

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION 2040 S. PACHECO SANTA FE, NEW MEXICO 87505 (505) 827-7131

November 13, 1996

# CERTIFIED MAIL RETURN RECEIPT NO. P-288-258-861

Mr. Phillip Youngblood Navajo Refining Company P. O. Drawer 159 Artesia, New Mexico 88211-0159

RE: Discharge Plan GW-028 Artesia Refinery Eddy County, New Mexico

Dear Mr. Youngblood:

The groundwater discharge plan renewal, GW-028, for the Navajo Refining Company (Navajo) Artesia Refinery located in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. The discharge plan consists of the original discharge plan as approved October 21, 1991, and the discharge plan renewal application dated June 19, 1996. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within five working days of receipt of this letter.

The discharge plan was submitted pursuant to Section 3106 of the New Mexico Water Quality Control Commission (WQCC) Regulations. It is approved pursuant to Section 3109.A. Please note Sections 3109.E and 3109.F., which provide for possible future amendments or modifications of the plan. Please be advised that approval of this plan does not relieve Navajo of liability should operations result in pollution of surface water, ground water, or the environment.

Please be advised that all exposed pits, including lined pits and open tanks (tanks exceeding 16 feet in diameter), shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.





Mr. Philip Youngblood November 13, 1996 Page 2

Please note that Section 3104 of the regulations require "When a facility has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3107.C. Navajo is required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.G.4., this plan is for a period of five years. This approval will expire on October 21, 2001, and Navajo should submit an application in ample time before this date. Note that under Section 3106.F. of the regulations, if a discharger submits a discharge plan renewal application at least 120 days before the discharge plan expires and is in compliance with the approved plan, then the existing discharge plan will not expire until the application for renewal has been approved or disapproved. It should be noted that all discharge plan facilities will be required to submit the results of an underground drainage testing program as a requirement for discharge plan renewal.

The discharge plan renewal application for the Navajo Refining Company Artesia Refinery is subject to WQCC Regulation 3114. Every billable facility submitting a discharge plan will be assessed a fee equal to the filing fee of \$50 plus one half of the flat fee or \$3,910 for refineries. The OCD has not received the \$50 filing fee or the \$3,910 flat fee. The \$50 filing fee is due upon receipt of this approval. The flat fee of \$3,910 may be paid in a single payment due on the date of the discharge plan approval or in five equal installments over the expected duration of the discharge plan. Installment payments shall be remitted yearly, with the first installment due on the date of the discharge plan approval and subsequent installments due on this date of each calendar year.

Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office.

On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge plan review.

Sincerely William J. Le Director WJL/mwa Attachment

xc: OCD Artesia Office

## ATTACHMENT TO THE DISCHARGE PLAN GW-028 RENEWAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN APPROVAL CONDITIONS (November 13, 1996)

- 1. <u>Payment of Discharge Plan Fees:</u> The \$50 filing fee is due upon receipt of this approval. The \$3,910 flat fee shall be submitted upon receipt of this approval. The required flat fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the plan, with the first payment due upon receipt of this approval.
- 2. <u>Navajo Commitments:</u> Navajo will abide by all commitments submitted in the discharge plan application dated June 19, 1996.
- 3. <u>Reverse Osmosis Reject Water:</u>
  - A. The discharge of reject water from the reverse osmosis treatment facility to Eagle Draw shall not exceed the following standards:

Constituent	Concentration	Unit
Aluminum	87	ug/l
Arsenic	100	ug/l
Beryllium	18	ug/l
Barium	1000	ug/l
Boron	750	ug/l
Cadmium	10	ug/l
Chlordane	0.015	ug/l
Chlorine	30	ug/l
Chromium	50	ug/l
Cobalt	50	ug/l

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Copper	1000	ug/l
Cyanide	18	ug/l
Fluoride	1600	ug/l
Iron	1000	ug/l
Manganese	200	ug/l
Lead	6	ug/l
Mercury	0.042	ug/l
Nickel	200	ug/l
NH3 as N	0.07	ug/l
Radium 226+228	30	pCi/l
Selenium	12	ug/l
Silver	0.4	ug/l
Vanadium	282	ug/l
Zinc	10	mg/l
Sulfate	2661	mg/1
Chloride	275	mg/l
Total Dissolved Solids	4555	mg/1
Chemical Oxygen Demand	125	mg/l
рН	6.6 to 8.6	S.U.

- B. Constituents not listed in A. above for which there are standards established pursuant to WQCC Regulation 3103 will not exceed the set numerical standard in that regulation.
- C. No toxic pollutant listed in WQCC regulation 1101 TT. will be present in the discharge.

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- D. SAMPLING: samples of the discharge will be taken and analyzed on the following schedule:
  - i. Major cations/anions and heavy metals will be sampled quarterly.
  - ii. All other constituents will be sampled annually.
  - iii. Analysis for all parameters will be pursuant to EPA approved methods.
  - iv. Sampling and analytical QA/QC records will be retained for all sampling events.
  - v. All samples will be "grab" samples.
  - vi. Discharge flow will be monitored and recorded on a daily basis.
  - vii. Sampling frequency can be reduced, on a parameter by parameter basis, upon application and OCD approval provided all analytical data in the previous year was no greater than seventy-five (75) percent of the effluent limit.
  - viii. All samples collected in a monitoring period will be reported.
  - ix. Sampling and flow measurement will be representative of the volume and nature of the discharge.
  - x. Sample data and analytical results will be reported to the OCD on a quarterly basis and are due prior to the 15th day of the month following the calender quarter. (e.g. 1st quarter results are due prior to April 15th).

# 4. Effluent Pipeline:

- A. Navajo Refining Company will be required to demonstrate integrity of its three-mile long effluent pipeline between the main refinery complex and the disposal ponds by January 1, 1997. Results will be submitted to the OCD by February 14 1997.
- B. Effluent from the pipeline shall be sampled annually where it enters the ponds. Field pH and conductivity shall be measured. Analysis shall include aromatic and halogenated volatile organics, major cations/anions plus fluoride, WQCC metals and PAH's.

#### 5. <u>Product and Waste Disposal:</u>

All recovered product, waste filters or treatment system waste products will be recycled and/or disposed of at an OCD approved facility or in an OCD approved manner.

#### 6. Lead Contamination:

A plan and schedule for delineating, testing and disposing of any lead contaminated soil located between tanks 417 and 418 will be submitted to the OCD by February 14, 1997.

#### 7. Ground Water and Treatment System Monitoring:

A. Ground water from monitor wells, the remediation and the treatment system will be sampled and analyzed according to the following schedule. All water quality sampling will be conducted according to EPA approved protocol and laboratory techniques.

Sampling point	Biweekly	Monthly	Quarterly	Annually
Air Stripper Effluent		601** 602** PAH's		Cations/anions Heavy metals
RA-2723	602**			
RA-4196		602**		
RA-4798		602**		
RA-313*		602**		
RA-314*		602**		
RA-1331*		602**		
RA-307*		602**		
RA-1227*		602**		
RA-3156			602**	
RA-3353			602**	
KWB-1A			601** 602**	PAH's Cation/anions Heavy metals
KWB-1C			601** 602**	PAH's Cation/anions Heavy metals

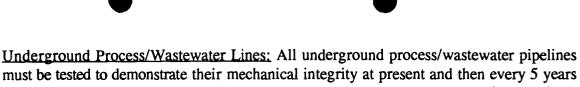
KWB-2A	601** 602**	PAH's Cation/anions Heavy metals
KWB-3A	601** 602**	PAH's Cation/anions Heavy metals
KWB-7	601** 602**	PAH's Cation/anions Heavy metals
KWB-9	601** 602**	PAH's Cation/anions Heavy metals

Sampled during irrigation season

- EPA laboratory method

- B. An annual report will be submitted to the OCD by February 28 of each year. The annual reports will contain:
  - i. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.
  - ii. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Copies of the most recent years laboratory analytical data sheets will also be submitted
  - iii. A quarterly water table elevation map using the water table elevation of the ground water in all refinery monitor wells.
  - iv. Plots of water table elevation vs. time for each ground water monitoring point.
  - v. A quarterly product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells.
  - vi. The volume of product recovered in the remediation/treatment system during each quarter and the total recovered to date.
  - vii. The volume of total fluids pumped from all recovery wells and trenches during each quarter and the total volume recovered to date.

- 8. <u>Drum Storage:</u> All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums will be stored on their sides with the bungs in and lined up on a horizontal plane. Chemicals in other containers such as sacks or buckets will also be stored on an impermeable pad and curb type containment. A plan and schedule will be provided to the OCD by February 14, 1997 for properly storing all drums which do not meet OCD requirements.
- 9. <u>Process Areas:</u> All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all process areas which do not meet OCD requirements.
- 10. <u>Above Ground Tanks:</u> All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new facilities or modifications to existing facilities must place the tank on an impermeable type pad within the berm. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all above ground tanks which do not meet OCD requirements.
- 11. <u>Above Ground Saddle Tanks:</u> Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing all above ground saddle tanks which do not meet OCD requirements.
- 12. <u>Labeling:</u> All tanks, drums and containers should be clearly labeled to identify their contents and other emergency information necessary if the tank were to rupture, spill, or ignite. A plan and schedule will be provided to the OCD by February 14, 1997 for properly labeling all tanks, drums and containers which do not meet OCD requirements.
- 13. <u>Below Grade Tanks/Sumps:</u> All below grade tanks, sumps, and pits must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design. All pre-existing sumps and below-grade tanks must demonstrate integrity on an annual basis. Integrity tests include pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps. The OCD will be notified at least 72 hours prior to all testing so that an OCD representative may witness the testing. All required testing will be completed by December 31, 1996. A plan and schedule will be provided to the OCD by February 14, 1997 for properly containing, repairing and/or replacing all below grade tanks, sumps, and pits which do not meet OCD requirements.



- 14. <u>Underground Process/Wastewater Lines:</u> All underground process/wastewater pipelines must be tested to demonstrate their mechanical integrity at present and then every 5 years there after, or prior to discharge plan renewal. Permittees may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing so that an OCD representative may witness the testing. All required testing will be completed by December 31, 1996. A plan and schedule will be provided to the OCD by February 14, 1997 for properly repairing and/or replacing all below grade lines for which integrity could not be achieved.
- 15. <u>Class V Wells</u>: Leach fields and other wastewater disposal systems at OCD regulated facilities which inject fluid other than domestic waste sewage below the surface are considered Class V injection wells under the EPA UIC program. All class V wells will be closed unless, it can be demonstrated that protectable groundwater will not be impacted in the reasonably foreseeable future. Class V wells must be closed through the Santa Fe Office. The OCD allows industry to submit closure plans which are protective of human health, environment and groundwater as defined by the WQCC, and are cost effective.
- 16. <u>Housekeeping:</u> All systems designed for spill collection/prevention should be inspected to ensure proper operation and to prevent overtopping or system failure.

Any non-exempt contaminated soils that are collected at the facility will be tested for hazardous constituents, and after receiving OCD approval, will be disposed of at an OCD approved site.

- 17. <u>Spill Reporting:</u> All spills/releases shall be reported pursuant to OCD Rule 116 and WQCC 1203 to the OCD Artesia District Office.
- 18. <u>Transfer of Discharge Plan:</u> The OCD will be notified prior to any transfer of ownership, control, or possession of a facility with an approved discharge plan. A written commitment to comply with the terms and conditions of the previously approved discharge plan must be submitted by the purchaser and approved by the OCD prior to transfer.
- 19. <u>Closure:</u> The OCD will be notified when operations of the facility are discontinued for a period in excess of six months. Prior to closure of the facility a closure plan will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.





20. <u>Certification:</u> Navajo, by the officer whose signature appears below, accepts this permit and agrees to comply with all terms and conditions contained herein. Navajo further acknowledges that these conditions and requirements of this permit may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Accepted:

NAVAJO REFINING COMPANY

by\_

Title



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# JUN 3 0 2003 OIL CONSERVATION DIVISION

April 17, 2003

الأفجيج والمعجب والمعرفين فالتدو

#### CERTIFIED MAIL RETURN RECEIPT NO. 5357 7133

Mr. Darrell Moore Environmental Manager for Water and Waste Navajo Refining Company L.P. P.O. Box 159 Artesia, New Mexico 88211-0159

RE: Discharge Permit GW-028 Artesia Refinery Eddy County, New Mexico

Dear Mr. Moore:

The groundwater discharge permit renewal, GW-028, for the Navajo Refining Company L.P. (Navajo) Artesia Refinery located in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 working days of receipt of this letter.

The original discharge permit was approved on October 21, 1991 with an expiration date of October 21, 1996. The discharge permit renewal application dated June 20, 2001 including attachments, and subsequent information dated March 15, 2002, discharge permit addendum dated May 31, 2002 submitted pursuant to Section 3106 of the New Mexico Water Quality Control Commission (WQCC) Regulations also includes all earlier applications and all conditions later placed on those approvals.

The discharge permit is renewed pursuant to Section 3109.C. Please note Section 3109.G, which provides for possible future amendment of the permit. Please be advised that approval of this permit does not relieve Navajo Refining Company L.P. of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does it relieve Navajo Refining Company L.P. of its responsibility to comply with any other governmental authority's rules and regulations. Please be advised that all exposed pits, including lined pits and open top tanks (exceeding 16 feet in diameter) shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.





Please note that Section 3104. of the regulations requires that "when a permit has been approved, discharges must be consistent with the terms and conditions of the permit." Pursuant to Section 3107.C., Navajo Refining Company L.P. is required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.H.4., this approval is for a period of five years. **This approval will expire October 21, 2006** and an application for renewal should be submitted in ample time before that date. Pursuant to Section 3106.F. of the regulations, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit application for the Navajo Refining Company L.P., Artesia Refinery is subject to the WQCC Regulation 3114. Every billable facility submitting a discharge permit will be assessed a fee equal to the filing fee of \$100.00 plus flat fee of \$8400.00 for Oil Refineries. The OCD has not received the \$8400.00 flat fee.

Please make all checks payable to: Water Quality Management Fund C/o: Oil Conservation Division 2040 South Pacheco Santa Fe, New Mexico 87505.

If you have any questions, please contact Wayne Price of my staff at (505-476-3487) or E-mail WPRICE@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Roger C. Anderson Environmental Bureau Chief RCA/lwp Attachment-1 xc: OCD Artesia Office

### ATTACHMENT TO THE DISCHARGE PERMIT GW-028 APPROVAL Navajo Refining Company L.P., Artesia Refinery DISCHARGE PERMIT APPROVAL CONDITIONS April 17, 2003

- 1. Payment of Discharge Permit Fees: The \$100.00 filing fee has been received by the OCD. There is a required flat fee of \$8400.00 for Oil Refineries. The fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the discharge plan, with the first payment due upon receipt of this approval. OCD recommends that Navajo pay the required flat fee 30 days after permit approval. If Navajo chooses to make annual payments then OCD will require documentation of payment to be included in the annual report.
- 2. <u>Commitments:</u> Navajo Refining Company L.P. will abide by all commitments submitted in the discharge permit renewal application dated June 20, 2001 including attachments, subsequent information dated March 15, 2002, discharge permit addendum dated May 31, 2002 and these conditions for approval.
- 3. Drum Storage: All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums should be stored on their sides with the bungs in place and lined up on a horizontal plane. Chemicals in other containers such as sacks or buckets must also be stored on an impermeable pad with curbing.
- 4. <u>Process Areas:</u> All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design.
- 5. <u>Above Ground Tanks</u>: All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new facilities or modifications to existing facilities must place the tank on an impermeable type pad within the berm.
- 6. <u>Above Ground Saddle Tanks</u>: Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure.

- 7. Labeling: All tanks, drums, and other containers should be clearly labeled to identify their contents and other emergency information necessary if the tank were to rupture, spill, or ignite. OCD will allow master plans to be used that identifies all tanks, location, size and contents with a numbering system marked on the tanks which corresponds to plot plans contained in the plan.
- 8. Below Grade Tanks/Sumps/Pits/Ponds: All below grade tanks, sumps, pits and ponds must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design. All below grade tanks, sumps and pits must be tested annually or as specified below (Additional Conditions), except systems that have secondary containment with leak detection. These systems with leak detection shall have a monthly inspection of the leak detection to determine if the primary containment is leaking. Results of tests and inspections shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Any system found to be leaking shall be reported pursuant to Item # 12. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps, or other OCD approved methods. The OCD will be notified at least 72 hours prior to all testing.

APL Separators: A closure plan for OCD approval shall be filed by February 28, 2004 for the Old API separator (South Plant), the North and South Plant current API Separators and the Wastewater Plant Separator.

New Wastewater (Total Plant) API Separator: Navajo must conform to permit condition Item #8. above.

Additional Conditions: Navajo shall develop a spreadsheet that contains all underground tanks/sumps/pits. Each device or system shall have an identification number, drawing reference, date installed, test dates, test method, pass/fail/repair information with signature, and investigation results if applicable. Navajo shall test at a minimum 20% of the total below grade devices each year.

9. Underground Process/Wastewater Lines: All underground process/wastewater pipelines including the effluent pipeline between the main refinery complex and the disposal wells, must be approved by the OCD prior to installation and must be tested to demonstrate their mechanical integrity every five (5) years. Results of such tests shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing.

Additional Conditions: Navajo shall develop a spreadsheet that contains all underground process and wastewater lines. Each line shall have an identification number, drawing reference, date installed, test dates, test method, pass/fail/repair information with signature, and investigation results if applicable. Navajo shall test at a minimum 20% of the underground process/wastewater pipelines each year.

- 10. Class V Wells: No Class V wells that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes will be approved for construction and/or operation unless it can be demonstrated that groundwater will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD regulated facilities which inject non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic waste only must be permitted by the New Mexico Environment Department.
- 11. Housekeeping: All systems designed for spill collection/prevention, and leak detection will be inspected monthly to ensure proper operation and to prevent over topping or system failure. All open to atmosphere spill collection devices will be emptied of fluids, other than rainwater, within 48 hours of discovery. Enclosed secondary containment devices shall be emptied of all fluids within 48 hours to ensure that the primary device is not leaking. A record of inspection will be retained on site for a period of five years.
- 12. Spill Reporting: All spills/releases shall be reported pursuant to OCD Rule 116. and WQCC 1203. to the OCD Artesia District Office.
- 13. Waste Disposal: All wastes will be disposed of at an OCD approved facility. Only oilfield exempt wastes shall be disposed of down Class II injection wells. Non-exempt oilfield wastes that are non-hazardous may be disposed of at an OCD approved facility upon proper waste determination per 40 CFR Part 261. Any waste stream that is not listed in the discharge permit will be approved by OCD on a case-by-case basis.

OCD is attaching a copy of the Non-Hazardous Material Flow Diagram supplied in the discharge plan addendum dated May 31, 2002.

Rule 712 Waste: Pursuant to Rule 712, disposal of certain non-domestic waste is allowed at solid waste facilities permitted by the New Mexico Environment Department as long as the waste stream is identified in the discharge permit, and existing process knowledge of the waste stream does not change without notification to the Oil Conservation Division. The following waste is hereby approved: Solid Waste (Trash/Refuse).

- 14. <u>OCD Inspections:</u> Additional requirements may be placed on the facility based upon results from OCD inspections.
- 15. Storm Water Plan: Navajo Refining Company L.P. shall maintain stormwater runoff controls. As a result of operations if any water contaminant that exceeds the WQCC standards listed in 20 NMAC 6.2.3101 is discharged in any stormwater run-off then Navajo shall notify the OCD within 24 hours, modify the permit within 15 days and submit for OCD approval. Navajo shall also take immediate corrective actions pursuant to Item 12 of these conditions.

Unlined Stormwater Retention Basins: These basins shall be lined, monitored, and records maintained pursuant to Item #8 of these conditions of approval or Navajo may propose an alternate method subject to OCD approval.

- 16. Reverse Osmosis Reject Water:
  - A. The discharge of reject water from the reverse osmosis treatment facility to Navajo Farms shall not exceed the following standards: *Discharge to Eagle Draw is prohibited.*

Constituent	Concentration	Unit
Aluminum	87	ug/l
Arsenic	100	ug/l
Beryllium	18	ug/l
Barium	1000	ug/l
Boron	750	ug/l

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Cadmium	10	ug/l
Chlordane	0.015	ug/l
Chlorine	30	ug/l
Chromium	50	ug/l
Cobalt	50	ug/l
Copper	1000	ug/l
Cyanide	18	ug/l
Fluoride	2500 *	ug/l
Iron	1000	ug/l
Manganese	200	ug/l
Lead	6	ug/l
Mercury	0.042	ug/l
Nickel	200	ug/l
NH3 as N	0.07	ug/l
Radium 226+228	30	pCi/l
Selenium	12	ug/l
Silver	0.4	ug/l
Vanadium	282	ug/l
Zinc	10	mg/l
Sulfate	2661	mg/l
Chloride	275	mg/l
Total Dissolved Solids	4555	mg/l
Chemical Oxygen Demand	125	mg/l
pH	6.6 to 8.6	S.U.

Bod	< 30	mg/l
TSS	<.5	mg/l
Fecal Coloform Bacteria	<500 organisms	Per/ 100 ml

\*Amended June 29, 1993

- B. Constituents not listed in A. above for which there are standards established pursuant to WQCC Regulation 3103 will not exceed the set numerical standard in that regulation.
- C. No toxic pollutant listed in WQCC regulation 1101 TT. will be present in the discharge.
- D. SAMPLING: samples of the discharge will be taken and analyzed on the following schedule:
  - i. Major cations/anions and heavy metals will be sampled at a minimum of semi-annually.
  - ii. All other constituents will be sampled annually, including the constituents in the above table and Volatile, Semi-Volatile Organic Compounds including Pesticides using EPA methods 624,625 and 608 respectively.
  - iii. Analysis for all parameters will be pursuant to EPA approved methods.
  - iv. Sampling and analytical QA/QC records will be retained for all sampling events.
  - v. All samples will be "grab" samples.
  - vi. Discharge flow will be monitored and recorded on a daily basis.
  - vii. Sampling frequency can be reduced, on a parameter-by-parameter basis, upon application and OCD approval provided all analytical data in the previous year was no greater than seventy-five (75) percent of the effluent limit.
  - viii. All samples collected in a monitoring period will be reported.
  - ix. Sampling and flow measurement will be representative of the volume and

nature of the discharge.

- x. Any constituent that exceeds the standards listed above shall be cause for Navajo to stop discharging to the farm area and provide OCD immediate notification. Navajo may not resume discharging until the problem has been corrected.
- xi. Sample data, analytical results and flow measurements shall be reported to the OCD in the annual report.
- 17. <u>Vadose Zone and Water Pollution</u>: The previously submitted investigation(s) and remediation permits were submitted pursuant to the discharge permit and all future discoveries of contamination will be addressed through the discharge permit process.

Ground Water and Treatment System Monitoring:

- A. Navajo shall collect perimeter groundwater samples on a semi-annual basis from monitoring wells MW-52, KWB-2R, KWB-13, KWB-9, KWB-3A, KWB-11A, KWB-7, NP-1, NP-2, KWB-45, and MW-18. The samples shall be analyzed for concentrations of benzene, toluene, ethylbenzene and xylene (BTEX), and methyl tertiary butyl ether (MTBE) pursuant to EPA approved methods.
- B. Navajo shall collect groundwater samples on an annual basis from monitoring wells KWB-1A, KWB-1C, KWB-2R, KWB-3A, KWB-4, KWB-5, KWB-6, KWB-8, KWB-9, KWB-10, MW- 18, MW-28, MW-29, MW-45, MW-48, MW-49 and from the following recovery trenches that do not have measurable phase-separated hydrocarbons (PSH's); RW-1 through RW-15, and Bolton Road # 1-4. These samples shall be analyzed for Volatiles, Semi-Volatiles, WQCC Metals, General Chemistry including Major Anions and Cations, nitrate/nitrite, dissolved oxygen and oxidation-reduction potential (ORP) all pursuant to EPA approved methods.
- C. All Recovery Trenches and all wells (including North Colony Landfarm and Tetraethyl-lead wells) with phase-separated hydrocarbons (PSH's) shall be checked at a minimum of once per month and recorded on a spreadsheet. The sheet shall be in table form containing all of the recovery wells, date inspected, product thickness measured to .01 inch, amount of product/water recovered. If product is observed then appropriate steps will be taken to recover product as reasonably possible using the best available technology.

- D. Navajo shall collect groundwater samples from the following irrigation wells at the beginning and end of the irrigation season; RA 313, RA 314, RA3723, RA3156, RA 3353, RA 1331, RA 4196, RA 4798 and Larue well. The samples shall be analyzed for concentrations of benzene, toluene, ethylbenzene and xylene (BTEX), methyl tertiary butyl ether (MTBE), Volitale Organic Compounds (VOC's), Semi-Volatile Compounds, WQCC Metals, General Chemistry including Major Anions and Cations all pursuant to EPA approved methods.
- E. Evaporation Ponds near Pecos River (Out-of-Service): Navajo shall collect perimeter groundwater samples on a bi-annual basis with at least one half of these wells being analyzed each year. The samples shall be analyzed for concentrations of benzene, toluene, ethylbenzene and xylene (BTEX), and methyl tertiary butyl ether (MTBE), Semi-Volatiles, WQCC Metals and General Chemistry including anions and cations pursuant to EPA approved methods. Any WQCC constituent found to exceed the groundwater standard shall be highlighted and noted in the annual report.
- F. RCRA Solid Waste Management Units (SMUS) or AREAS OF CONCERN:

Navajo shall collect groundwater samples on a quarterly basis from monitoring wells NCL-32, 33, 34, 44, 49, TEL-1, 2, 3, 4, and from the following monitor wells MW-53, 54A, 55. These samples shall be analyzed for Volatiles, Semi-Volatiles, WQCC Metals, General Chemistry including Major Anions and Cations, nitrate/nitrite, dissolved oxygen and oxidation-reduction potential (ORP) all pursuant to EPA approved methods. Navajo shall incorporate these findings into a summary table with all other monitor points on-site. Any WQCC constituent found to exceed the groundwater standard shall be highlighted and noted in the annual report.

- G. <u>ANNUAL REPORT</u>: An annual report will be submitted to the OCD by February 28 of each year. The annual reports will contain:
  - i. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.
  - ii. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Any WQCC constituent found to exceed the groundwater standard shall be highlighted and noted in the annual report. Copies of the most recent years laboratory analytical data sheets will also be submitted
  - iii. An annual water table potentiometric elevation map using the water table

elevation of the ground water in all refinery monitor wells. A corrected water table elevation shall be determined for all wells containing phase-separated hydrocarbons. This map shall show well locations, pertinent site features, and the direction and magnitude of the hydraulic gradient.

- iv. Plots of water table elevation vs. time for each ground water monitoring point.
- v. A annual product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells. This map shall include isopleth lines for products and contaminants of concern.
- vi. The volume of product recovered in the remediation/treatment system during each quarter and the total recovered to date.
- vii. The volume of total fluids pumped from all recovery wells and trenches during each quarter and the total volume recovered to date.
- viii. <u>Electronic filing:</u> OCD would like to encourage Navajo to file this report in an acceptable electronic format.

#### H. Additional Requirements:

- i. Up-date all on-site and off-site maps, showing the current status of all recovery/monitor/ domestic, irrigation wells and pertinent features including the stormwater basins.
- ii. Navajo shall investigate the area between monitor well KWB-2R and the refinery to determine if a new remediation recovery trench system is required in this area. The results of this investigation shall be submitted to the OCD by July 15, 2003.
- iii. Replace MW-1 at the evaporation ponds.
- iv. If phase separated hydrocarbons are found east of the Bolton Road recovery system, then a new recovery system shall be installed in this area including down-gradient monitor wells. Any wells that reveal contaminants that exceed WQCC groundwater standards shall be reason to install addition wells to determine the extent of contamination. All new

wells shall be added to the maps and included in the annual report.

- v. Bolton Road recovery trench #1 and 2 were noted to be dry. OCD is concerned that contaminants may be flowing under and past these trenches. Please modify these trenches or install monitor wells directly east of these devices by November 15, 2003.
- vi. Navajo shall investigate the area between RW-10 and RW-5 and the refinery to determine if a new remediation recovery trench system is required in this area. The results of this investigation shall be submitted to the OCD by November 15, 2003.
- vii. Navajo shall install an additional monitor well northeast of MW-45. OCD is concerned about contamination migrating off of Navajo property in this area by November 15, 2003.
- viii. Navajo shall notify the OCD Santa Fe and local district office at least 2 weeks in advance of all scheduled activities such that the OCD has the opportunity to witness the events and split samples. For large facilities, i.e. referinies, an annual notification will suffice.
- ix. Navajo shall notify the NMOCD of the discovery of separated-phase hydrocarbons or the exceedance of a WQCC standard in any down gradient monitor well where separate-phase hydrocarbons were not present or where contaminant concentrations did not exceed WQCC standards during the preceding monitoring event pursuant to NMOCD Rule 116.
- 18. <u>Transfer of Discharge permit:</u> The OCD will be notified prior to any transfer of ownership, control, or possession of a facility with an approved discharge permit. A written commitment to comply with the terms and conditions of the previously approved discharge permit must be submitted by the purchaser and approved by the OCD prior to transfer.
- 19. Closure: The OCD will be notified when operations of the facility are discontinued for a period in excess of six months. Prior to closure of the facility a closure permit will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

20. Certification: Navajo Refining Company L.P. by the officer whose signature appears below, accepts this and agrees to comply with all terms and conditions contained herein. Navajo Refining Company L.P. further acknowledges that these conditions and requirements of this may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Conditions accepted by:

Navajo Refining Company L.P.

OHALLIP L. YOUNG BLOD Company Representative- print name / 11 pate 6/25/63 Company Representative- Sign Title 6/1 DIRECTUR DE ENURDONMENTAL AFFAIRS



# NEW MEXICO ENERGY, MISERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON Governor Joanna Prukop Cabinet Secretary

April 17, 2003

Lori Wrotenbery Director Oil Conservation Division

#### CERTIFIED MAIL RETURN RECEIPT NO. 5357 7133

Mr. Darrell Moore Environmental Manager for Water and Waste Navajo Refining Company L.P. P.O. Box 159 Artesia, New Mexico 88211-0159

RE: Discharge Permit GW-028 Artesia Refinery Eddy County, New Mexico

Dear Mr. Moore:

The groundwater discharge permit renewal, GW-028, for the Navajo Refining Company L.P. (Navajo) Artesia Refinery located in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 working days of receipt of this letter.

The original discharge permit was approved on October 21, 1991 with an expiration date of October 21, 1996. The discharge permit renewal application dated June 20, 2001 including attachments, and subsequent information dated March 15, 2002, discharge permit addendum dated May 31, 2002 submitted pursuant to Section 3106 of the New Mexico Water Quality Control Commission (WQCC) Regulations also includes all earlier applications and all conditions later placed on those approvals.

The discharge permit is renewed pursuant to Section 3109.C. Please note Section 3109.G, which provides for possible future amendment of the permit. Please be advised that approval of this permit does not relieve Navajo Refining Company L.P. of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does it relieve Navajo Refining Company L.P. of its responsibility to comply with any other governmental authority's rules and regulations. Please be advised that all exposed pits, including lined pits and open top tanks (exceeding 16 feet in diameter) shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that Section 3104. of the regulations requires that "when a permit has been approved, discharges must be consistent with the terms and conditions of the permit." Pursuant to Section 3107.C., Navajo Refining Company L.P. is required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.H.4., this approval is for a period of five years. **This approval will expire October 21, 2006** and an application for renewal should be submitted in ample time before that date. Pursuant to Section 3106.F. of the regulations, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit application for the Navajo Refining Company L.P., Artesia Refinery is subject to the WQCC Regulation 3114. Every billable facility submitting a discharge permit will be assessed a fee equal to the filing fee of \$100.00 plus flat fee of \$8400.00 for Oil Refineries. The OCD has not received the \$8400.00 flat fee.

- IS - TRANSFE - SAMALE (D)		
Please make all checks	payable to: Water Quality Mai	nagement Fund
	C/o: Oil Conser	reation Division
	2040 Sou	ith Pacheco
	Santa Pa	New Mexico 87505.
	Santa re,	INCW MEXICU 67 JUJ.

If you have any questions, please contact Wayne Price of my staff at (505-476-3487) or E-mail WPRICE@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Roger C. Anderson Environmental Bureau Chief RCA/lwp Attachment-1 xc: OCD Artesia Office

# ATTACHMENT TO THE DISCHARGE PERMIT GW-028 APPROVAL Navajo Refining Company L.P., Artesia Refinery DISCHARGE PERMIT APPROVAL CONDITIONS April 17, 2003

- 1. Payment of Discharge Permit Fees: The \$100.00 filing fee has been received by the OCD. There is a required flat fee of \$8400.00 for Oil Refineries. The fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the discharge plan, with the first payment due upon receipt of this approval. OCD recommends that Navajo pay the required flat fee 30 days after permit approval. If Navajo chooses to make annual payments then OCD will require documentation of payment to be included in the annual report.
- 2. <u>Commitments:</u> Navajo Refining Company L.P. will abide by all commitments submitted in the discharge permit renewal application dated June 20, 2001 including attachments, subsequent information dated March 15, 2002, discharge permit addendum dated May 31, 2002 and these conditions for approval.
- 3. Drum Storage: All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums should be stored on their sides with the bungs in place and lined up on a horizontal plane. Chemicals in other containers such as sacks or buckets must also be stored on an impermeable pad with curbing.
- 4. <u>Process Areas:</u> All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design.
- 5. <u>Above Ground Tanks</u>: All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new facilities or modifications to existing facilities must place the tank on an impermeable type pad within the berm.
- 6. <u>Above Ground Saddle Tanks</u>: Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure.

- 7. Labeling: All tanks, drums, and other containers should be clearly labeled to identify their contents and other emergency information necessary if the tank were to rupture, spill, or ignite. OCD will allow master plans to be used that identifies all tanks, location, size and contents with a numbering system marked on the tanks which corresponds to plot plans contained in the plan.
- 8. Below Grade Tanks/Sumps/Pits/Ponds: All below grade tanks, sumps, pits and ponds must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design. All below grade tanks, sumps and pits must be tested annually or as specified below (Additional Conditions), except systems that have secondary containment with leak detection. These systems with leak detection shall have a monthly inspection of the leak detection to determine if the primary containment is leaking. Results of tests and inspections shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Any system found to be leaking shall be reported pursuant to Item # 12. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps, or other OCD approved methods. The OCD will be notified at least 72 hours prior to all testing.

APL Separators: A closure plan for OCD approval shall be filed by February 28, 2004 for the Old API separator (South Plant), the North and South Plant current API Separators and the Wastewater Plant Separator.

New Wastewater (Total Plant) API Separator: Navajo must conform to permit condition Item #8. above.

Additional Conditions: Navajo shall develop a spreadsheet that contains all underground tanks/sumps/pits. Each device or system shall have an identification number, drawing reference, date installed, test dates, test method, pass/fail/repair information with signature, and investigation results if applicable. Navajo shall test at a minimum 20% of the total below grade devices each year.

9. Underground Process/Wastewater Lines: All underground process/wastewater pipelines including the effluent pipeline between the main refinery complex and the disposal wells, must be approved by the OCD prior to installation and must be tested to demonstrate their mechanical integrity every five (5) years. Results of such tests shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing.

Additional Conditions: Navajo shall develop a spreadsheet that contains all underground process and wastewater lines. Each line shall have an identification number, drawing reference, date installed, test dates, test method, pass/fail/repair information with signature, and investigation results if applicable. Navajo shall test at a minimum 20% of the underground process/wastewater pipelines each year.

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Chlorine	30	ug/l
Chromium	50	ug/l
Cobalt	50	ug/l
Copper	1000	ug/l
Cyanide	18	ug/l
Fluoride	2500 *	ug/l
Iron	1000	ug/l
Manganese	200	ug/l
Lead	6	ug/l
Mercury	0.042	ug/l
Nickel	200	ug/l
NH3 as N	0.07	ug/l
Radium 226+228	30	pCi/l
Selenium	12	ug/l
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- G. <u>ANNUAL REPORT</u>: An annual report will be submitted to the OCD by February 28 of each year. The annual reports will contain:
  - i. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.
  - ii. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Any WQCC constituent found to exceed the groundwater standard shall be highlighted and noted in the annual report. Copies of the most recent years laboratory analytical data sheets will also be submitted
  - iii. An annual water table potentiometric elevation map using the water table

> elevation of the ground water in all refinery monitor wells. A corrected water table elevation shall be determined for all wells containing phaseseparated hydrocarbons. This map shall show well locations, pertinent site features, and the direction and magnitude of the hydraulic gradient.

- iv. Plots of water table elevation vs. time for each ground water monitoring point.
- v. A annual product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells. This map shall include isopleth lines for products and contaminants of concern.
- vi. The volume of product recovered in the remediation/treatment system during each quarter and the total recovered to date.
- vii. The volume of total fluids pumped from all recovery wells and trenches during each quarter and the total volume recovered to date.
- viii. <u>Electronic filing:</u> OCD would like to encourage Navajo to file this report in an acceptable electronic format.

#### H. Additional Requirements:

- i. Up-date all on-site and off-site maps, showing the current status of all recovery/monitor/ domestic, irrigation wells and pertinent features including the stormwater basins.
- ii. Navajo shall investigate the area between monitor well KWB-2R and the refinery to determine if a new remediation recovery trench system is required in this area. The results of this investigation shall be submitted to the OCD by July 15, 2003.
- iii. Replace MW-1 at the evaporation ponds.
- iv. If phase separated hydrocarbons are found east of the Bolton Road recovery system, then a new recovery system shall be installed in this area including down-gradient monitor wells. Any wells that reveal contaminants that exceed WQCC groundwater standards shall be reason to install addition wells to determine the extent of contamination. All new

wells shall be added to the maps and included in the annual report.

- v. Bolton Road recovery trench #1 and 2 were noted to be dry. OCD is concerned that contaminants may be flowing under and past these trenches. Please modify these trenches or install monitor wells directly east of these devices by November 15, 2003.
- vi. Navajo shall investigate the area between RW-10 and RW-5 and the refinery to determine if a new remediation recovery trench system is required in this area. The results of this investigation shall be submitted to the OCD by November 15, 2003.
- vii. Navajo shall install an additional monitor well northeast of MW-45. OCD is concerned about contamination migrating off of Navajo property in this area by November 15, 2003.
- viii. Navajo shall notify the OCD Santa Fe and local district office at least 2 weeks in advance of all scheduled activities such that the OCD has the opportunity to witness the events and split samples. For large facilities, i.e. referinies, an annual notification will suffice.
- ix. Navajo shall notify the NMOCD of the discovery of separated-phase hydrocarbons or the exceedance of a WQCC standard in any down gradient monitor well where separate-phase hydrocarbons were not present or where contaminant concentrations did not exceed WQCC standards during the preceding monitoring event pursuant to NMOCD Rule 116.
- 18. Transfer of Discharge permit: The OCD will be notified prior to any transfer of ownership, control, or possession of a facility with an approved discharge permit. A written commitment to comply with the terms and conditions of the previously approved discharge permit must be submitted by the purchaser and approved by the OCD prior to transfer.
- 19. Closure: The OCD will be notified when operations of the facility are discontinued for a period in excess of six months. Prior to closure of the facility a closure permit will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

20. Certification: Navajo Refining Company L.P. by the officer whose signature appears below, accepts this and agrees to comply with all terms and conditions contained herein. Navajo Refining Company L.P. further acknowledges that these conditions and requirements of this may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Conditions accepted by: Navajo Refining Company L.P.

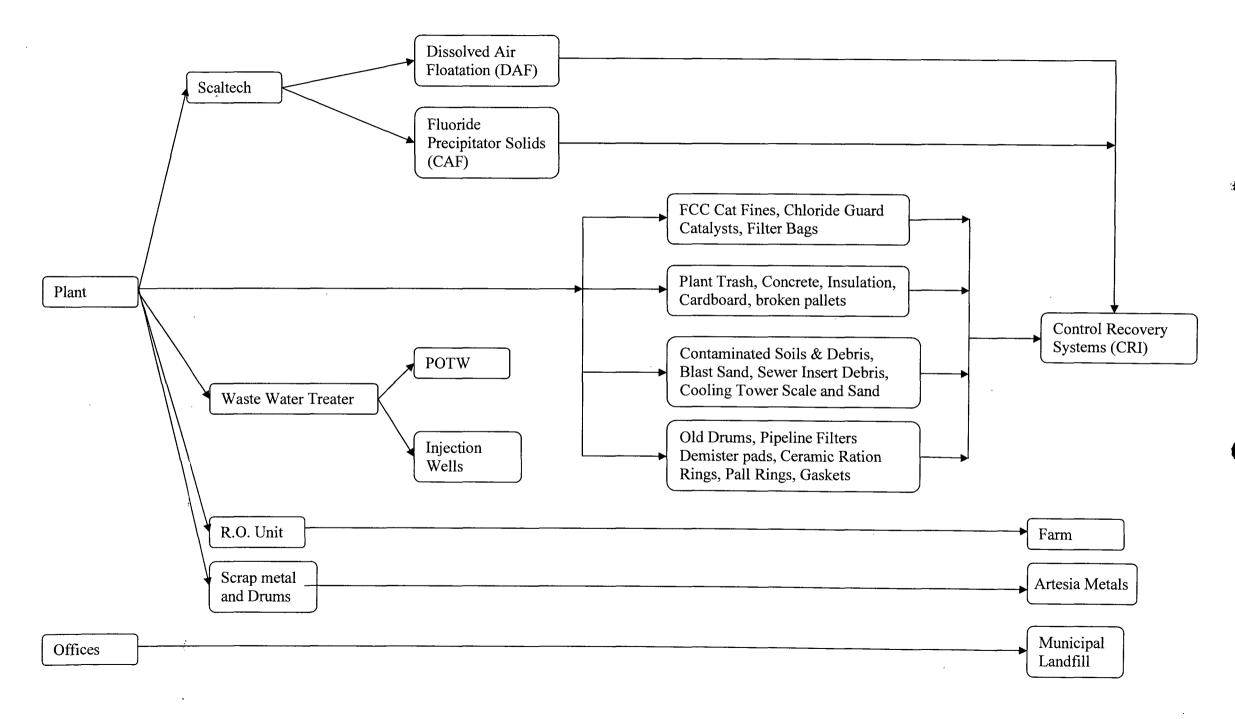
Company Representative- print name

Date

Company Representative- Sign

Title

# NON-HAZARDOUS MATERIAL FLOW DIAGRAM





# NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT



OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

March 27, 1999

CERTIFIED MAIL RETURN RECEIPT NO. Z 357 870 114

Mr. Darrell Moore Environmental Manager for Water and Waste Navajo Refining Company P.O. Box 159 Artesia, New Mexico 88211-0159

Re: Minor Permit Modification to GW-28, Navajo Refining Co., Eddy County, NM

Dear Mr. Moore:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of Navajo Refining Company's (NRC) letter dated January 26, 1999 requesting that permit GW-28 be modified to include using "RO Reject" water to be used as irrigation water on additional property owned and operated by Navajo which is adjacent to the existing farm property. This request is hereby approved.

Please be advised that NMOCD approval of this site does not relieve NRC of liability should their operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve NRC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you have any questions, please contact Wayne Price of my staff at (505)827-7155.

Sincerely Yours,

Roger C. Anderson Environmental Bureau Chief

xc: OCD Artesia District Office

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TELEPHONE (505) 748-3311

> EASYLINK 62905278

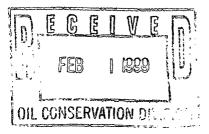


# REFINING COMPANY

FAX (505) 746-6410 ACCTG (505) 746-6155 EXEC (505) 748-9077 ENGR (505) 746-4438 P / L

501 EAST MAIN STREET ° P. O. BOX 159 ARTESIA, NEW MEXICO 88211-0159

January 26, 1999



Mr. Wayne Price New Mexico Oil Conservation Division Environmental Bureau 2040 S. Pacheco St. Santa Fe, NM 87505-5472

RE: Minor Permit Modification to GW-28, Navajo Refining Co., Eddy County, NM

Dear Wayne,

As we discussed on the phone, Navajo currently irrigates a farm that we own with a stream of water that we call our "RO Reject". Navajo has recently acquired another farm that we would like to irrigate with this "RO Reject" water also.

Enclosed is a map that shows the current location of the outfall of this stream (blue), along with a proposed additional outfall (red). Navajo would pipe this stream and add valves to allow us to put this RO Reject on either farm at any time. This would give us some flexibility during planting and harvesting seasons.

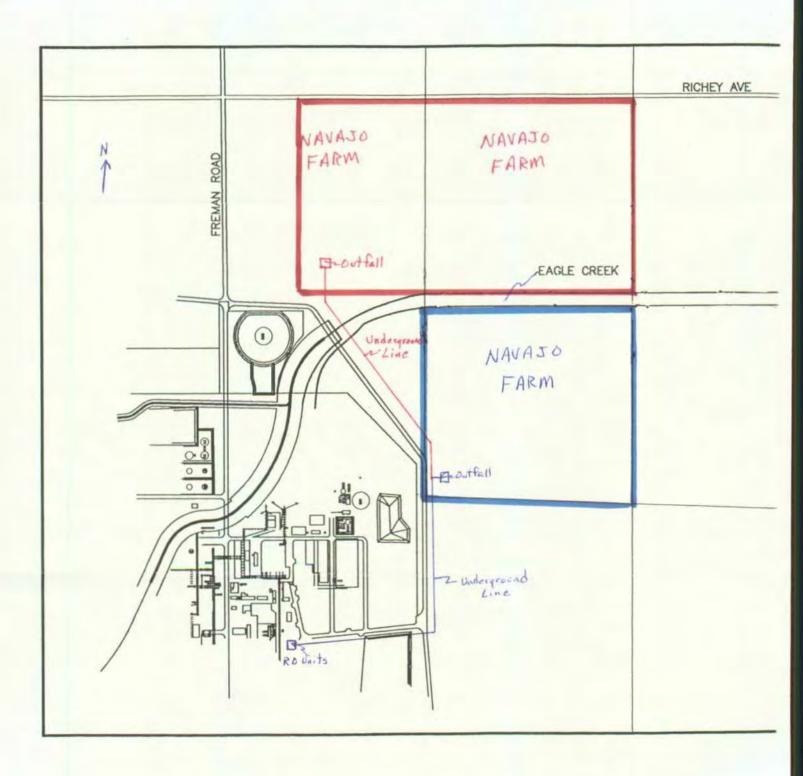
As we discussed, a minor modification to our Discharge Permit GW-28 should take care of this problem. If I can answer any questions, please feel free to call me at 505-748-3311. Thank you for your time in this matter.

Sincerely, NAVAJO REFINING COMPANY

Of More

Darrell Moore Environmental Manager for Water and Waste

Encl.



STATE OF NEW MEXICO

THURSDAY OF THE STATE

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION 2040 S. PACHECO SANTA FE, NEW MEXICO 87505 (505) 827-7131

June 14, 1996

CERTIFIED MAIL RETURN RECEIPT NO. P-269-269-163

Mr. Darrell Moore Environmental Specialist Navajo Refining Company P.O. Box 159 Artesia, New Mexico 88211-0159

#### RE: GROUND WATER REMEDIATION DISCHARGE PLAN GW-28 MODIFICATION NAVAJO ARTESIA REFINERY EDDY COUNTY, NEW MEXICO

Dear Mr. Moore:

The New Mexico Oil Conservation Division (OCD) has completed a review of Navajo Refining Company's April 3, 1996 "QUARTERLY INJECTION REPORT, NAVAJO REFINING COMPANY, EDDY CO., NEW MEXICO". This document contains Navajo's proposal to modify discharge plan GW-28's ground water remediation and monitoring reporting frequency from quarterly to annually.

The above referenced requested modification of the previously approved ground water discharge plan, GW-28, for the Artesia Refinery located in SE/4 Section 1, E/2 Section 8, W/2 Section 9, N/2 Section 12, Township 17 South, Range 26 East (NMPM), Eddy County, New Mexico is hereby approved under the conditions contained in the enclosed attachment.

The discharge plan (GW-28) was originally approved on October 21, 1991. The modification does not significantly alter the discharge streams, therefore, public notice was not issued.

The application for modification was submitted pursuant to Water Quality Control Commission (WQCC) Regulation 3107.C and is approved pursuant to WQCC Regulation 3109.

Please note that Section 3104 of the WQCC regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3107.C, you are required to notify the Director of any facility expansion, production increase or process modification that would result in a significant modification in the discharge of potential ground water contaminants. Mr. Darrell Moore June 14, 1996 Page 2

Please be advised that OCD approval does not relieve you of liability should your remediation and monitoring program fail to adequately monitor or remediate ground water contamination related to Navajo's operations. In addition, this approval does not relieve you of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions please, contact William Olson of my staff at (505) 827-7154.

Sincerely,

Roger C. Anderson Environmental Bureau Chief

WJL/WCO

xc: OCD Artesia District Office Richard D. Mayer, EPA Region VI Benito Garcia, NMED Hazardous & Radioactive Materials Bureau

#### ATTACHENT TO THE DISCHARGE PLAN -28 APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION CONDITIONS (June 14, 1996)

#### 1. <u>Product and Waste Disposal:</u>

All recovered product, waste filters or treatment system waste products will be recycled and/or disposed of at an OCD approved facility or in an OCD approved manner.

#### 2. Ground Water and Treatment System Monitoring:

Ground water from monitor wells and the treatment system will be sampled and analyzed according to the attached Appendix A "NAVAJO REFINERY GROUND WATER REMEDIATION SYSTEM MONITORING, SAMPLING AND REPORTING PROGRAM". All water quality sampling will be conducted according to EPA approved protocol and laboratory techniques.

#### 3. <u>Annual Reports:</u>

An annual report will be submitted to the OCD by February 28 of each year. The annual reports will contain:

- a. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.
- b. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Copies of the most recent years laboratory analytical data sheets will also be submitted
- c. A quarterly water table elevation map using the water table elevation of the ground water in all refinery monitor wells.
- d. Plots of water table elevation vs. time for each ground water monitoring point.
- e. A quarterly product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells.
- f. The volume of product recovered in the remediation/treatment system during each quarter and the total recovered to date.
- g. The volume of total fluids pumped from all recovery wells and trenches during each quarter and the total volume recovered to date.



#### APPENDIX A NAVAJO REFINERY GROUND WATER REMEDIATION MONITORING, SAMPLING AND REPORTING PROGRAM (June 14, 1996)

Sampling point	Biweekly	Monthly	Quarterly	Annually
Air Stripper Effluent	· · · · · · · · · · · · · · · · · · ·	601** 602** PAH's		Cations/anions Heavy metals
RA-2723	602**			
RA-4196		602**		
RA-4798		602**		
RA-313*		602**		
RA-314*		602**		
RA-1331*		602**		
RA-307*		602**		
RA-1227*		602**		
RA-3156			602**	
RA-3353			602**	
KWB-1A			601** 602**	PAH's Cation/anions Heavy metals
KWB-1C			601** 602**	PAH's Cation/anions Heavy metals
KWB-2A			601** 602**	PAH's Cation/anions Heavy metals
KWB-3A			601** 602**	PAH's Cation/anions Heavy metals
KWB-7			601** 602**	PAH's Cation/anions Heavy metals
KWB-9			601** 602**	PAH's Cation/anions Heavy metals

Sampled during irrigation season EPA laboratory method



#### APPENDIX A (continued) NAVAJO REFINERY GROUND WATER REMEDIATION MONITORING, SAMPLING AND REPORTING PROGRAM (June 14, 1996)

Sampling point	Biweekly	Monthly	Quarterly	Annually
KWB-11A			601** 602**	PAH's Cations/anions Heavy metals
KWB-12A			601** 602**	PAH's Cations/anions Heavy metals
MW-18			601** 602.~*	PAH's Cations/anions Heavy metals
MW-28			601** 602**	PAH's Cations/anions Heavy metals
MW-29			601** 602**	PAH's Cations/anions Heavy metals
MW-45			601** 602**	PAH's Cations/anions Heavy metals

\*\* - EPA laboratory method

1. --



# NEW MEXICO EL RGY, MINERALS & NATURAL RESOURCES DEPARTMENT



OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

April 10, 1996

# CERTIFIED MAIL RETURN RECEIPT NO. Z-765-962-941

Mr. David Griffin Navajo Refining Company P. O. Drawer 159 Artesia, New Mexico 88211-0159

# RE: Discharge Plan GW-028 Renewal Artesia Refinery Eddy County, New Mexico

Dear Mr. Griffin:

On October 21, 1991, the groundwater discharge plan, GW-028, for the Artesia Refinery located in the SE/4 of Section 1, E/2 of Section 8, W/2 of Section 9, N/2 of Section 12, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, was approved by the Director of the New Mexico Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The approval will expire on October 21, 1996.

If the facility continues to have potential or actual effluent or leachate discharges and wishes to continue operation, the discharge plan must be renewed. Pursuant to Section 3106.F., if an application for renewal is submitted at least 120 days before the discharge plan expires (on or before June 21, 1996), then the existing approved discharge plan for the same activity shall not expire until the application for renewal has been approved or disapproved. The OCD is reviewing discharge plan submittals and renewals carefully and the review time can extend for several weeks to months. Please indicate whether Navajo has made, or intends to make, any changes in the system, and if so, please include these modifications in the application for renewal.

Mr. David Griffin April 10, 1996 Page 2

The discharge plan renewal application for the Artesia Refinery is subject to WQCC Regulation 3114. Every billable facility submitting a discharge plan for renewal will be assessed a fee equal to the filing fee of \$50 plus a flat fee of \$3,910.00 for oil refineries.

The \$50 filing fee is to be submitted with the discharge plan renewal application and is nonrefundable. The flat fee for an approved discharge plan renewal may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the discharge plan - with the first payment due the at the time of approval. Please make all checks payable to: NMED-Water Quality Management and addressed to the OCD Santa Fe Office.

Please submit the original discharge plan renewal application and one copy to the OCD Santa Fe Office and one copy to the OCD Artesia District Office. Note that the completed and signed application form must be submitted with your discharge plan renewal request.

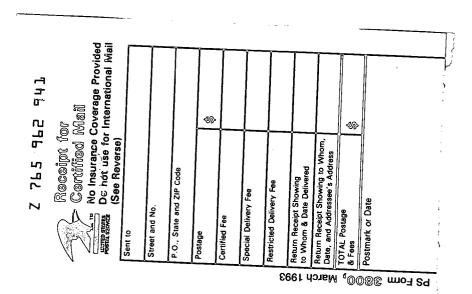
If Navajo no longer has any actual or potential discharges and a discharge plan is not needed, please notify this office. If Navajo has any questions, please do not hesitate to contact Mark Ashley at (505) 827-7155.

Sincerely,

Roger C. Anderson Environmental Bureau Chief

RCA/mwa

xc: OCD Artesia Office



TELEPHONE (505) 748-3311



EASYLINK 62905278 FAX (505) 746-6410 ACCTG 75 D(505) 746-6155 EXEC (505) 748-9077 ENGR (505) 748-9077 ENGR (505) 748-4438 P / L

501 EAST MAIN STREET . P. O. BOX 1591

REFINING COMPAT

April 8, 1996

Mr. Roger C. Anderson Environmental Bureau Chief New Mexico Oil Conservation Division 2040 S. Pacheco Santa Fe, NM 87505

Re: Return of Signed Acceptance of Modification to Discharge Plan GW-28

Dear Roger:

Navajo would like to thank you, your staff and Director LeMay for issuing this modification to Navajo's discharge plan. It was a pleasant surprise to receive the modification after the temporary loss of the application during your relocation. Enclosed is the signed attachment for the discharge plan.

Sincerely,

David G. Griffin Manager of Environmental Affairs for Water & Waste

DGG/sj

Enc.





OIL CONSERVATION DIVISION 2040 South Pacheco Street Santa Fe, New Mexico 87505 (505) 827-7131

March 27, 1996

## CERTIFIED MAIL RETURN RECEIPT NO. Z-765-962-938

Mr. David Griffin Navajo Refining Company P. O. Box 159 Artesia, New Mexico 88211-0159

## RE: Discharge Plan GW-28 Modification Discharge to City of Artesia POTW Eddy County, New Mexico

Dear Mr. Griffin:

The discharge plan modification GW-28 to discharge approximately 5,000 gallons per day of effluent from the Navajo Refining Company (Navajo) Evaporation Pond #6 located in the SE/4 of Section 1, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico to the City of Artesia's Sewage Treatment Plant (POTW), is hereby approved under the conditions contained in the enclosed attachment. The discharge plan modification consists of the request dated October 13, 1994. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within five working days of receipt of this letter.

The discharge plan modification was submitted pursuant to Section 3107.C of the New Mexico Water Quality Control Commission (WQCC) Regulations. Based on the information provided in the modification request and in the approved discharge plan, it is approved pursuant to Section 3109. Please be advised the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface water, ground water, or the environment.

Please note that Section 3104 of the regulations require "When a facility has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3107.C. you are required to notify the Director of any facility expansion, production increase, or

Mr. David Griffin March 27, 1996 Page 2

process modification that would result in any change in the discharge of water quality or volume.

On behalf of the staff of the New Mexico Oil Conservation Division (OCD), I wish to thank you and your staff for your cooperation during this discharge plan modification review.

Sincerely, William J. LeMay Director WJL/mwa

xc: OCD Artesia Office

# ATTACHMENT TO THE DISCHARGE PLAN GW-28 MODIFICATION APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION REQUIREMENTS (March 27, 1996)

- 1. <u>Navajo Commitments:</u> Navajo will abide by all commitments submitted in the modification application letter dated October 13,1994 from Navajo as well as the discharge plan approval dated October 21, 1991.
- 2. Navajo will abide by the agreement reached with the City of Artesia for discharging effluent that has been pretreated in Navajo's waste water treatment system. Effluents discharged to the POTW will be within compliance of the pretreatment standards for petroleum refineries (40 CFR 419.25 and 419.27).
- 3. <u>Housekeeping</u>: All systems designed for spill collection/prevention should be inspected frequently to ensure proper operation and to prevent overtopping or system failure.

The two inch pipeline laid from Pond #6 to the POTW will be inspected monthly for integrity.

- 4. <u>Spill Reporting</u>: All spills/releases shall be reported pursuant to OCD Rule 116 and WQCC 1203 to the appropriate OCD District Office.
- 5. Conditions accepted by:

**Company Representative** 

Date

Title

# ATTACHMENT TO THE DISCHARGE PLAN GW-28 MODIFICATION APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION REQUIREMENTS (March 27, 1996)

- 1. <u>Navajo Commitments:</u> Navajo will abide by all commitments submitted in the modification application letter dated October 13,1994 from Navajo as well as the discharge plan approval dated October 21, 1991.
- 2. Navajo will abide by the agreement reached with the City of Artesia for discharging effluent that has been pretreated in Navajo's waste water treatment system. Effluents discharged to the POTW will be within compliance of the pretreatment standards for petroleum refineries (40 CFR 419.25 and 419.27).
- 3. <u>Housekeeping</u>: All systems designed for spill collection/prevention should be inspected frequently to ensure proper operation and to prevent overtopping or system failure.

The two inch pipeline laid from Pond #6 to the POTW will be inspected monthly for integrity.

4. <u>Spill Reporting</u>: All spills/releases shall be reported pursuant to OCD Rule 116 and WQCC 1203 to the appropriate OCD District Office.

5. Conditions accepted by:

# ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

dated
he amount of \$ 56.00
GWO28
Date:
Data: 1/16/96
U.a. Date: 1-17-96
Renewal
licable FY <u>96</u>
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ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION OIVISION 2040 S. PACHECO SANTA FE, NEW MEXICO 87505 (505) 827-7131

December 12, 1995

## CERTIFIED MAIL RETURN RECEIPT NO. Z-765-962-914

Mr. David Griffin Navajo Refining Company P. O. Box 159 Artesia, New Mexico 88211-0159

# RE: Discharge Plan GW-28 Modification Artesia Refinery, Evaporation Pond Dikes Raising Eddy County, New Mexico

Dear Mr. Griffin:

The discharge plan modification GW-28 requesting permission to raise the perimeter dikes around the Evaporation Ponds in order to maintain the minimum freeboard required by GW-28 for the Navajo Refining Company Artesia Refinery located in the W/2 of Section 9, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. The discharge plan modification consists of the request dated December 8, 1995.

The discharge plan modification was submitted pursuant to Sections 3106 and 3107.C of the New Mexico Water Quality Control Commission (WQCC) Regulations. Based on the information provided in the modification request and in the approved discharge plan, it is approved pursuant to Sections 3109 and 5101.A. Please be advised the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface water, ground water, or the environment which may be actionable under other laws and/or regulations.

Please note that Section 3104 of the regulations require "When a facility has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section

Mr. David Griffin December 12, 1995 Page 2

3107.C. you are required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

The discharge plan modification for the Navajo Refining Company Artesia Refinery is subject to WQCC Regulation 3114. Every billable facility submitting a discharge plan modification will be assessed a fee equal to the filing fee of \$50 plus the flat rate \$3,910 for refineries. The New Mexico Oil Conservation Division (OCD) considers this modification to be minor in nature, therefore the flat fee has been waived. As of this date the OCD has not received your \$50 filing fee which will be due upon receipt of this letter.

Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office.

On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge plan modification review.

Sincerely William J. LeMa Director WJL/mwa

xc: OCD Artesia Office

## ATTACHMENT TO THE DISCHARGE PLAN GW-28 MODIFICATION APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION REQUIREMENTS (December 12, 1995)

- 1. The additional diking will not exceed two feet in height. The soil used to raise the dikes will be done by compacting six inch lifts of the same clay loam that was used to build the existing dikes.
- 2. The previously approved minimum freeboard will be maintained.

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- 2. All diking will be compacted to a minimum of 95 proctor. Fluids used to compact lifts will be similar to fluids placed in ponds, without hydrocarbons.
- 3. The previously approved inside and outside grade of the dikes will be maintained.
- 4. This approval will expire on the corresponding date of EPA closure of the ponds.
- 4. The OCD will be notified at least 72 hours in advance of all activities such that the OCD may have the opportunity to witness the activities and/or split samples.

**TELEPHONE** 

(505) 748-3311

EASYLINK 62905278



5 DF 501 EAST MAIN STREET O P. O. BOX 159 ARTESIA, NEW MEXICO 88211-0159

December 8, 1995

Mr. Roger C. Anderson **Environmental Bureau Chief Oil Conservation Division** 2040 S. Pacheco Santa Fe, NM 87505

FAX: (505) 827-8177

OIL CONSERVE

TING COMPANEL: , EC(505) 746-6410 ACCTG

. N HEVESTIFAX

(505) 746-6155 EXEC (505) 748-9077 ENGR

(595) ⊉46-4438 P / L

Minor Modification to Navajo's Discharge Permit GW-28 Re: Evaporation Pond Dikes Raising

Dear Mr. Anderson:

Navajo needs to raise the perimeter dikes around the Evaporation Ponds in order to maintain the minimum freeboard required in permit GW-28. Colder winter weather has reduced the rate of evaporation with the current influx to the ponds exceeding the loss from the ponds. The ponds are presently very near minimum allowable freeboard and therefore Navajo finds itself in a near emergency situation needing to add additional height to the existing dikes. Navajo feels that two (2) additional feet added to the dikes will be sufficient to carry us through the winter and maintain required freeboard.

As you are well aware, Navajo has dramatically reduced the volume of water discharged to the evaporation ponds (65% reduction) by pioneering the use of feedwater pretreatment by Reverse Osmosis. Along with this reduction in discharge to the ponds Navajo has been removing ponds from service and closing them down as part of the settlement of our Department of Justice case.

Navajo finds it frustrating to have to request this authorization since we have been trying since mid-summer 1994 to remove another significant volume of water currently flowing to the ponds. This water is coming from our hydrocarbon recovery wells. In 1994 you permitted Navajo to separately treat and reinject this remediation water back into the ground from which it came. Since your authorization, Navajo ran into a long delay by NMED -Hazardous Waste while they reviewed and finally (November 14, 1995) decided that this remediation and reinjection did not have to be done under their jurisdiction. Navajo then thought that everything was approved and construction could start immediately on the treatment and reinjection system. These hopes have now been set back following a meeting on November 28, 1995 with the Air Pollution Control Bureau (APCB). During this meeting, Navajo was informed that it is now APCB policy that any new installation of air emitting equipment at a Major source facility must go through a full permit process even if there are no change in overall refinery emissions or even if there is a decrease in emissions. The current permit process is taking from 6 months to possibly as long as 2 years for permit issuance. So,

it appears the permit cannot be obtained in time to do us any good this winter, although we continue to work with the APCB to possibly obtain an exemption.

The APCB policy has also affected the pending remediation at our Lovington Refinery. The same delay to obtain an air permit applies as long as Navajo owns or operates the remediation system. What we have worked out with the APCB is that, if Navajo turn-key contracts the remediation so that the equipment is owned and operated by others, there is no permit required. The remediation contractor would be considered a separate source of emissions and would therefore be entitled to a permit exemption if air emissions are kept below 1 lb/hr after controls. Having to turn over ownership and operational control of this remediation costs Navajo unnecessary additional expense plus it complicates the operation of the remediation.

The two (2) feet to be added to the pond dikes will be done by compacting 6 inch lifts of the same clay loam soil that was used to build the existing dikes. Moisture will be added as needed for optimum compaction. Compaction will be done by vibratory roller to a minimum 85 proctor. The existing dike slopes will be maintained and since the top of the existing dikes average 15 ft. in width, the additional 2 ft. in height will still allow for a roadway on the top of the dikes.

Your prompt approval is needed for this addition so that construction can be done before more freeboard is lost. If you have any questions or need further information, please call me at 505-748-3311.

Sincerely yours,

David G. Griffin Manager of Environmental Affairs for Water & Waste

DGG/sj



ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION 2040 S. PACHECO SANTA FE, NEW MEXICO 87505 (505) 827-7131

May 16, 1995

## CERTIFIED MAIL RETURN RECEIPT NO. Z-765-962-725

Mr. David Griffin Navajo Refining Company P. O. Drawer 159 Artesia, New Mexico 88211-0159

## RE: Discharge Plan GW-28 Modification Artesia Refinery, Fire Training Fluids Eddy County, New Mexico

Dear Mr. Griffin:

The discharge plan modification GW-28 requesting an emergency clay lined pit to hold overflow fluids from fire training exercises for the Navajo Refining Company Artesia Refinery located in the W/2 of Section 9, Township 17 South, Range 26 East, NMPM, Eddy County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. The discharge plan modification consists of the modification request and analytical results for the fire training fluids submitted by Navajo Refining Company on July 21, 1994.

The discharge plan modification was submitted pursuant to Sections 3-106 and 3-107.C of the New Mexico Water Quality Control Commission (WQCC) Regulations. Based on the information provided in the modification request and in the approved discharge plan, it is approved pursuant to Sections 3-109 and 5-101.A. Please be advised the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface water, ground water, or the environment which may be actionable under other laws and/or regulations.

Please note that Section 3-104 of the regulations require "When a facility has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3-107.C. you are required to notify the Director of any facility expansion, production increase,

Mr. David Griffin May 16, 1995 Page 2

or process modification that would result in any change in the discharge of water quality or volume.

The discharge plan modification for the Navajo Refining Company Artesia Refinery is subject to WQCC Regulation 3-114.B.1.(b).3 discharge plan modification fee. Every billable facility submitting a discharge plan modification will be assessed a fee equal to the filing fee of fifty (50) dollars plus the flat rate of thirty-nine hundred and ten dollars (\$3910) for refineries. The New Mexico Oil Conservation Division (OCD) considers this modification to be minor in nature, therefore the flat fee has been waived. As of this date (May 16, 1995) the OCD has not received your fifty (50) dollar filing fee which will be due upon receipt of this letter.

Please make all checks payable to: NMED-Water Quality Management and addressed to the OCD Santa Fe Office.

On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge plan review.

Sincerely,

William J. LeMay Director

WJL/mwa

xc: Ray Smith, OCD Artesia Office Tim Gumm, OCD Artesia Office

## ATTACHMENT TO THE DISCHARGE PLAN GW-28 MODIFICATION APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION REQUIREMENTS (May 16, 1995)

- 1. <u>Clay Lined Pit:</u> EPA requires that the compacted materials meet a permeability (transmissivity) of 10<sup>-7</sup> cm/sec. The clay liner will meet the EPA standards and will be tested after construction with the results submitted to the OCD Santa Fe Office.
- 2. <u>Clay Liner Thickness</u>: The clay liner will be a minimum of two feet in thickness with two feet of soil on top of the liner.
- 3. <u>Fire Training Fluids</u>: Navajo will remove all fluids collected in the pit within 24 hours of each training session. The process wastewater system will be used for disposal of the fluids.

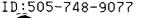
After the fluids are removed, the top one foot of soil will be disced to enhance and stimulate bioremediation.

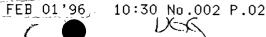
4. <u>Sampling</u>: The fluids and soils will be tested every five years at discharge plan renewal.

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5. <u>Notification:</u> The OCD will be notified at least 72 hours in advance of all activities such that the OCD may have the opportunity to witness the activities and/or split samples.

NAVAJO REFINIG





393-5821

56/4 1-17-26

# **REFINING COMPANY**

501 EAST MAIN STREET • P. O. BOX 159 ARTESIA, NEW MEXICO 88211-0159

October 13, 1994

(505) 746-6155 EXEC (505) 748-9077 ENGR (505) 746-4438 P/L

FAX

(505) 746-6410 ACCTG

Mr. Roger Anderson, Chief Environmental Bureau Oil Conservation Division P.O. Box 2088 Santa Fe, N.M. 87501

Re: GW-28 Modification - Discharge to City of Artesia POTW

Dear Mr. Anderson:

Navajo is, herein, applying for a modification to our discharge permit No. GW-28. Navajo is requesting a modification to recognize the discharge of a small volume of effluent out of Navajo's Evaporation Pond #6 to the City of Artesia's Sawage Treatment Plant (POTW). This discharge to the POTW will eliminate any question that the refinery's waste water treatment and handling system is excluded from RCRA by virtue of the specific exclusion of waste water treatment facilities under either section 402 (i.e., NPDES program) or 307(b) (i.e., discharges to POTW) of the Clean Water Act.

Although Navajo has always considered its waste water treatment system to be exempt from RCRA, it is now electing to eliminate any questions relating to the exempt status of the waste water treatment system by discharging under section 307(b) of the Clean Water Act. This section does not require that all of a facilities effluent be discharged to a POTW, therefore Navajo reached an agreement with the City of Artesia to discharge a relatively small amount of effluent to the POTW that had been pretreated in our waste water treatment system. The best quality effluent Navajo has is that which has resided longest in the Evaporation Ponds. Navajo has installed a small portable pump station in Pond #6 and laid a 2 inch line to the POTW. This installation is of a temporary nature as Navajo has reached a tentative agreement with the Department of Justice to discontinue the use of the Evaporation Ponds within approximately 2 years. You will, of course, be informed of the actual dates and changes as they are finalized.

A copy of the agreement between Navajo and the City of Artesia is enclosed as well as a plot plan showing how Navajo has installed the discharge line to the POTW. The City monitors the quality of the effluent delivered to them. The pumping system installed has a maximum pumping capacity of 14 gpm. Navajo operates the system during normal business hours on normal business days such that a typical discharge to the City POTW would actually be 5,000 gallons per day and 100,000 gallons per month. The City POTW is routinely treating 850,000 gallons per day, so you can see that Navajo's 5,000 gallons has little, if any, effect on the City's operation.

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EASYLINK 62905278

5. A.

TELEPHONE

(505) 748-3311



You will notice on the enclosed plot plan the Navajo has isolated, drained and is in the process of remediating Pond #2. In order to do this the effluent line (12 inch) from the Refinery was moved to discharge into Pond #4. The work on Pond #2 is also a result of negotiations with the Department of Justice.

The final enclosure you should find is an analysis typical of the water being discharged to the City. You will see from the analysis that Navajo is well within compliance of the pretreatment standards for Petroleum Refineries discharging to a POTW (40 CFR 419.25 and 419.27).

The standards are a maximum of :

Oil & Grease100 mg/lAmmonia100 mg/lTotal Chromium1 mg/l

The \$50.00 filing fee is enclosed. Should you need any additional information, please call me at 505-748-3311.

Sincerely,

David G. Griffin Supt. Of Env. Affairs and Quality Control

DGG/te

Enclosures



ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

**OIL CONSERVATION DIVISION** 

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BRUCE KING GOVERNOR

July 25, 1994

POST OFFICE BOX 2088 STATE LANO OFFICE BUILDING SANTA FE, NEW MEXICO 87504 (505) 827-5800

ANITA LOCKWOOD CABINET SECRETARY

> CERTIFIED MAIL RETURN RECEIPT NO. P-111-334-149

Mr. Darrell Moore Environmental Specialist Navajo Refining Company P.O. Box 159 Artesia, New Mexico 88211-0159

### RE: GROUND WATER REMEDIATION DISCHARGE PLAN GW-28 MODIFICATION NAVAJO ARTESIA REFINERY EDDY COUNTY, NEW MEXICO

Dear Mr. Moore:

The New Mexico Oil Conservation Division (OCD) has completed a review of Navajo Refining Company's January 31, 1994, March 10, 1994, April 29, 1994, May 4, 1994 and June 23, 1994 correspondence. These documents contain Navajo's proposal to modify discharge plan GW-28 to include the treatment of contaminated ground water to New Mexico Water Quality Control Commission ground water standards and reinjection into recovery wells RW-4 and RW-6 and/or application to the farmland designated in the above referenced documents. The treated ground water is from the remediation of contaminate refinery ground water generated from the offsite recovery trenches and onsite recovery wells RW-5, RW-7, RW-8, RW-9 and RW-10.

The above referenced requested modification of the previously approved ground water discharge plan, GW-28, for the Artesia Refinery located in SE/4 Section 1, E/2 Section 8, W/2 Section 9, N/2 Section 12, Township 17 South, Range 26 East (NMPM), Eddy County, New Mexico is hereby approved under the conditions contained in the enclosed attachment.

The discharge plan (GW-28) was originally approved on October 21, 1991. The modification does not significantly alter the discharge streams, therefore, public notice was not issued.

The application for modification was submitted pursuant to Water Quality Control Commission (WQCC) Regulation 3-107.C and is approved pursuant to WQCC Regulation 3-109. Mr. Darrell Moore July 25, 1994 Page 2

Please note that Section 3-104 of the WQCC regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3-107.C, you are required to notify the Director of any facility expansion, production increase or process modification that would result in a significant modification in the discharge of potential ground water contaminants.

Please be advised that OCD approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters or the environment which may be actionable under other laws and/or regulations. In addition, this approval does not relieve you of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions please, contact William Olson of my staff at (505) 827-5885.

Sincerely,

William J. LeMa Director

WJL/WCO

xc: OCD Artesia District Office Richard D. Mayer, EPA Region VI

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## ATTACHMENT TO THE DISCHARGE PLAN GW-28 APPROVAL NAVAJO REFINING COMPANY ARTESIA REFINERY DISCHARGE PLAN MODIFICATION CONDITIONS (July 14, 1994)

### 1. Additional Monitor Wells

Because of the potential for water injected into monitor wells RW-4 and RW-6 to alter the natural hydraulic gradient and the lack of ground water monitoring points in certain areas of the refinery boundaries, the OCD requires that Navajo submit a work plan for the installation and sampling of additional monitor wells by September 23, 1994. This work plan will be submitted and implemented prior to commencing injection in monitor wells RW-4 and RW-6. The work plan will address the installation of ground water monitoring wells along the southern, eastern and western sides of the refinery. The work plan will also include a ground water sampling and analysis plan for the monitor wells.

### 2. <u>Product and Waste Disposal:</u>

All recovered product, waste filters or treatment system waste products will be recycled and/or disposed of at an OCD approved facility.

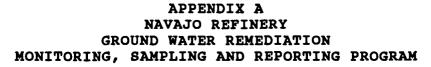
### 3. Ground Water and Treatment System Monitoring:

Ground water from monitor wells and the treatment system will be sampled and analyzed according to the attached Appendix A "NAVAJO REFINERY GROUND WATER REMEDIATION SYSTEM MONITORING, SAMPLING AND REPORTING PROGRAM". All water quality sampling will be conducted according to EPA approved protocol and laboratory techniques.

### 3. <u>Quarterly Reports:</u>

Quarterly reports will be submitted by January 1, April 1, July 1, and October 1 of each year. Quarterly reports will contain:

- a. A summary of the laboratory analytic results of water quality sampling of monitor wells and the treatment system from the previous quarter. The data from each monitoring point will be presented in tabular form and will list past and present sampling results.
- b. A water table elevation map using the water table elevation of the ground water in all refinery monitor wells (excluding monitor wells around the refinery's disposal ponds).
- c. A product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells.
- d. The total volume of product recovered in the treatment system during the quarter and to date.
- e. The total volume of fluid pumped from each well during the quarter and to date.
- f. The total volume of water reinjected and/or applied to the farmland during the quarter and to date.



Sampling point	Biweekly	Monthly	Quarterly	Annually
Air Stripper Effluent		601** 602** PAH's		Cations/anions Heavy metals
RA-2723	602**			
<b>RA-4196</b>		602**		
RA-4798		602**		
RA-313* J		602**		
RA-314* <sup>/</sup>		602**		
<b>RA-1331*</b>		602**		
RA-307*		602**		
RA-1227*		602**		
RA-3156			602**	
RA-3353			602**	
KWB-1A			601** 602**	PAH's Cation/anions Heavy metals
KWB-1C			601** 602**	PAH's Cation/anions Heavy metals
KWB-2A			601** 602**	PAH's Cation/anions Heavy metals
KWB-3A			601** 602**	PAH's Cation/anions Heavy metals
KWB-7			601** 602**	PAH's Cation/anions Heavy metals
KWB-9			601** 602**	PAH's Cation/anions Heavy metals

Sampled during irrigation season EPA laboratory method

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## APPENDIX A (continued) NAVAJO REFINERY GROUND WATER REMEDIATION MONITORING, SAMPLING AND REPORTING PROGRAM

Sampling point	Biweekly	Monthly	Quarterly	Annually
KWB-11A			601** 602**	PAH's Cations/anions Heavy metals
KWB-12A			601** 602**	PAH's Cations/anions Heavy metals
MW-18			601** 602**	PAH's Cations/anions Heavy metals
MW-28			601** 602**	PAH's Cations/anions Heavy metals
MW-29			601** 602**	PAH's Cations/anions Heavy metals
MW-45			601** 602**	PAH's Cations/anions Heavy metals

- Sampled during irrigation season - EPA laboratory method



ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

**OIL CONSERVATION DIVISION** 

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POST OFFICE BOX 208B

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SANTA FE, NEW MEXICO 87504

(505) 827-5800

BRUCE KING GOVERNOR

May 26, 1994

ANITA LOCKWOOD CABINET SECRETARY

> CERTIFIED MAIL RETURN RECEIPT NO. P-111-334-117

Mr. Darrell Moore Environmental Specialist Navajo Refining Company P.O. Box 159 Artesia, New Mexico 88211-0159

RE: MODIFICATION TO DISCHARGE PLAN GW-28 NAVAJO REFINERY EDDY COUNTY, NEW MEXICO

Dear Mr. Moore:

The New Mexico Oil Conservation Division (OCD) has reviewed your April 29, 1994 and May 4, 1994 correspondence providing additional information related to Navajo refinery's proposal to modify Navajo's previously approved discharge plan for the Navajo Refinery to include the discharge of treated ground water from the remediation of contaminated ground water at the facility.

Your April 29, 1994 and May 4, 1994 letters only address item #2 and item #4 of the information requested by OCD on February 10, 1994. In order for the OCD to complete a review of Navajo's discharge plan modification request, the OCD requests that Navajo submit the following information which was requested by OCD on February 10, 1994:

- 1. Please provide a map showing the location of all onsite and offsite monitor wells and the exact location of all proposed discharge points including the farmland where treated ground water would be used for irrigation purposes.
- 2. The requested modification does not indicate whether the piping between the air stripper system and the pumping well system will be installed above ground or below grade. Please provide this information and a map showing the proposed location of all piping including piping to the discharge points. Please be aware that the OCD requires that all below

Mr. Darrell Moore May 26, 1994 Page 2

> grade piping carrying fluids which exceed New Mexico Water Quality Control Commission (WQCC) ground water standards be pressure tested to three (3) psi above operating pressure prior to operation.

Receipt of the above information will allow the OCD to complete a review to this discharge plan modification.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson Hydrogeologist Environmental Bureau

xc: OCD Artesia District Office Richard D. Mayer, EPA Region VI

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ANITA LOCKWOOD CABINET SECRETARY

> CERTIFIED MAIL RETURN RECEIPT NO. P 111 334 319

Mr. Darrell Moore Navajo Refining Company P.O. Box 159 Artesia, NM 88211-0159

RE: Reverse Osmosis Reject Sampling Navajo Artesia Refinery Eddy County, New Mexico

Dear Mr. Moore, in the RO Rejet Water file

The New Mexico Oil Conservation Division (OCD) has received your May 13, 1994 proposal to continue quarterly sampling of the Reverse Osmosis (RO) reject water and discontinue the bi-weekly analyses which were required in the April 27, 1993 discharge plan modification approval. This proposal is based on the data submitted with the proposal summarizing the historical sample analyses.

In the April 27, 1993 discharge plan modification approval, condition 7 states that "Major cations/anions and heavy metal analysis frequency can be reduced to quarterly, on a parameter-byparameter basis, upon application and OCD approval provided all analytical data in the previous year was no greater than seventyfive (75) percent of the effluent limit." The submitted summary indicates that:

- five of the analyzed parameters (chloride, fluoride, aluminum, manganese and lead) exceeded the discharge standard at least once during the first year of analysis;
- 2) chloride exceeded the 75% of standard threshold on eighteen of the nineteen analyses tabulated, fluoride nine of thirteen times, and sulfate two of nineteen times;
- 3) several of the parameter detection limits equaled or were greater than the relevant standard (aluminum, arsenic, beryllium, cadmium, cobalt, selenium, silver, lead and mercury); and

May 23, 1994

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were not measured at the required

view of the submitted data, the request lysis of the RO Reject Water is denied.

s, call me at (505)827-4080 or Roger

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