GW - __028__

2017
AGWMR
(4 of 7)

2018

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/08/2018

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 3366 ft. Lat: 32.7547° N Lon: -104.3835° W

Station: **ARTESIA 6 S, NM US USC00290600**

Observation Time Temperature: 0730 Observation Time Precipitation: 0730

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2017	04	01	87	48	49	0.00		0.0		0		0.72	5	59	57			
2017	04	02	67	42	43	0.00		0.0		0		0.24	5	59	56			
2017	04	03	70	43	55	0.00		0.0		0		0.32	5	57	55			
2017	04	04	83	43	53	0.00		0.0		0		0.48	5	58	58			
2017	04	05	71	30	32	0.00		0.0		0		0.50	5	67	55			
2017	04	06	65	31	32	0.00		0.0		0		0.12	5	57	56			
2017	04	07	79	32	42	0.00		0.0		0		0.34	5	56	56			
2017	04	08	89	40	41	0.00		0.0		0		0.41	5	72	58			
2017	04	09	93	41	68	0.00		0.0		0		0.52	5	60	59			
2017	04	10	85	44	45	0.00		0.0		0		0.66	5	59	58			
2017	04	11	79	45	54	0.00		0.0		0		0.34	5	60	59			
2017	04	12	78	54	60	0.02		0.0		0		0.37	5	60	59			
2017	04	13	64	49	54	0.84		0.0		0		0.69	5	60	57			
2017	04	14	75	54	59	0.00		0.0		0		0.19	5	58	57			
2017	04	15	85	55	58	0.00		0.0		0		0.27	5	60	58			
2017	04	16	88	48	52	0.00		0.0		0		0.38	5	61	60			
2017	04	17	89	51	54	0.00		0.0		0		0.36	5	63	62			
2017	04	18	86	51	51	0.00		0.0		0		0.40	5	64	63			
2017	04	19	92	51	52	0.00		0.0		0		0.33	5	65	63			
2017	04	20	94	52	58	0.00		0.0		0		0.33	5	65	63			
2017	04	21	83	48	49	0.00		0.0		0		0.42	5	66	63			
2017	04	22	91	49	51	0.00		0.0		0		0.46	5	66	63			
2017	04	23	68	41	46	0.00		0.0		0		0.27	5	66	61			
2017	04	24	75	46	50	0.00		0.0		0		0.33	5	60	60			
2017	04	25	91	50	71	0.00		0.0		0		0.69	5	62	62			
2017	04	26	85	51	53	0.00		0.0		0		0.70	5	62	62			
2017	04	27	73	46	59	0.00		0.0		0		0.34	5	64	61			
2017	04	28	87	49	53	0.00		0.0		0		0.56	5	64	63			
2017	04	29	85	44	44	0.05		0.0		0		0.62	5	67	62			
2017	04	30	47	32	34	0.18		0.0		0		0.00	5	56	52			
Summary			80	45		1.09		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests.

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

HMI
Groundwater

Hydrologic Monitoring
1654 W. Sam Houston Pkwy. N.
Houston, Texas 77043

Phone 713.464.5206
Fax 713.464.5207

May 2, 2017

Ms. Julie Speer, P.G., EIT
Associate Project Manager
TRC
505 East Huntland Drive, Suite 250
Austin, Texas 78752

Subject: April 2017 (Biennial Event) Groundwater Monitoring
Sitewide Gauging, April 25, 2017
Groundwater Sampling, April 25-27, 2017
Navajo Refining Company, Artesia, New Mexico

Dear Ms. Speer:

This document summarizes groundwater monitoring field activities conducted by Hydrologic Monitoring, LLC (HMI) on behalf of TRC at the Navajo Refining Company, Artesia Refinery, Artesia, New Mexico.

Contents

Field Activities Narrative
Table 1: (Gauging Data, Groundwater Field Parameters, Well Inspections, with Analytical Program)
Groundwater Sampling SOP Memo
Groundwater Sampling Forms and Field Instrument Calibration Log
(provided in three emails, with wells in geographic-based order shown on Table 1)
Chain-of-Custody Forms (provided in three emails)

Field Activities Narrative

1. HMI conducted the *April 2017 (Spring) Event* (Biennial event, including the "SA", "A", and "B" designations on the attached scoping table, Navajo Refinery, Artesia, New Mexico. Sitewide gauging was conducted April 25, 2017. Groundwater sampling (177 wells sampled) was conducted April 25-27, 2017.

2. Groundwater sampling was conducted in accordance with the Site Sampling and Analysis Plan, EPA guidance, and the attached Memorandum - Low-Flow Groundwater Monitoring Standard Operating Procedures, Navajo Refining Co. - Artesia, New Mexico. Per regulatory instruction, if

measured LNAPL thickness was *less than* 0.03-feet, in any well scheduled for groundwater sampling, the LNAPL was removed, and the well was sampled. And if LNAPL thickness equaled 0.03-feet or *greater*, the well was not sampled. Gauging data, groundwater field parameters, and well inspection information is summarized in Table 1. Samples were shipped overnight to ESC Lab Sciences, Mt. Juliet, TN, via FedEx. The groundwater sampling process is documented on the attached groundwater sampling forms.

3. Field QA/QC Sampling (per Refinery Area):

Evaporation Ponds
Duplicates:
Dup-EP-01 at MW-7A
Dup-EP-02 at MW-22A
Dup-EP-03 at MW-3
Equipment Blanks:
EB-EP-01 collected over decontaminated gauging probe following sampling at MW-74
EB-EP-02 collected over decontaminated gauging probe following sampling at MW-124
EB-EP-03 collected over decontaminated gauging probe following sampling at MW-5A
EB-EP-04 collected over decontaminated gauging probe following sampling at MW-79
Trip Blank-EP-01
Trip Blank-EP-02
Trip Blank-EP-03

NCL
Duplicate:
Dup-NCL-01 at NCL-49
Equipment Blank:
EB-NCL-01 collected over decontaminated gauging probe following sampling at NCL-32
Trip Blank-NCL-01

TEL
Duplicate:
Dup-TEL-01 at TEL-4
Equipment Blank:
EB-TEL-01 collected over decontaminated gauging probe following sampling at TEL-3
Trip Blank-TEL-01

TMD
Trip Blank-TMD-01
Limited TMD scope generated no additional field QA/QC samples

REST ("rest" of the site)
Duplicates:
Dup-REST-01 at MW-113
Dup-REST-02 at MW-104
Dup-REST-03 at MW-134
Dup-REST-04 at MW-60
Dup-REST-05 at KWB-12B

Equipment Blanks:
EB-REST-01 collected over decontaminated gauging probe following sampling at MW-113
EB-REST-02 collected over decontaminated gauging probe following sampling at MW-104

EB-REST-03 collected over decontaminated gauging probe following sampling at MW-134
EB-REST-04 collected over decontaminated gauging probe following sampling at MW-60
EB-REST-05 collected over decontaminated gauging probe following sampling at KWB-12B
Trip Blank-REST-01
Trip Blank-REST-02
Trip Blank-REST-03
Trip Blank-REST-04

4. Site Notes:
   Beginning 2H17, "24HFNAV HOLLYFRONTIER SITE SPECIFIC ORTIENTATION ARTESIA – NM" will be taken at HASC annually, per Navajo, 4-20-17.
   HMI's 8-person team completed annual training at the safety training trailers on 4-26-16 (compliant through end of April 2017).
   HMI's DISA backgound check/drug/alcohol requirements were approved by onsite safety-trailer personnel on 10-19-15, as reported through HASC system.
   Per Navajo, purgewater is disposed in the pad sump, just inside, and to the left of the Main Gate entrance. Alternately, North Bundle Pad sump, as previously (fenced area of drums, etc.), notifying FCC control room for entrance.
   Sitewide well and gate lock combinations are "2013" (less often "2002").
   With suggested telephone notification, FedEx pickup from locked shed (35-25-39 combination) at approximately 16:00 daily, across from Artesia Wool Co (access area from "inside" Refinery).
   North side of Hwy 82, east of site, gate with cable and combination lock (8810).
   POTW bldg, check-in as needed, to borrow a key or get gate unlocked.
   Navajo's Mr. Robert Combs or Richard Orosco for daily permits.
   Navajo-well locks have been fully-deployed as possible, as of 2H16.
   Well surface completion inspections are documented on respective well gauging and sampling forms (summarized in Table 1). Well inspection items of potential concern (i.e., "Issues") are highlighted in yellow-color in Table 1. HMI provided sitewide well completion photographs (every monitor/recovery well addressed during the biennial April 2017 event) to both TRC and Navajo.

HMI appreciates the opportunity to assist TRC with this project. If you have any questions or would like additional information please feel free to call us at 713.464.5206.

Sincerely,

HYDROLOGIC MONITORING

Scott C. Ude

Scott C. Ude, P.G.

The seal appearing on this document was authorized by Scott C. Ude, P.G. 353 on May 2, 2017.

Attachments

cc: Bryan Gilbert, P.G., TRC-Austin

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-6A	Monitoring	MDB	1	EP	25-Apr	17:00	NA	12.21	0.00	19.05	26-Apr	18:10	7.69	20.2	5,600	1.3	-114.3	4.3	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-6B	Monitoring	MDB	2	EP	25-Apr	17:05	NA	12.10	0.00	52.27	26-Apr	18:50	7.58	20.4	5,770	0.7	-53.0	3.1	Clear	Yes	Closure	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-85	Monitoring	MDB		EP	25-Apr	16:30	9.70	10.42	0.72	20.34			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-86	Monitoring	MDB		EP	25-Apr	16:40	9.52	9.55	0.03	19.21			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
MW-120	Monitoring	MDB	3	EP	25-Apr	16:55	NA	12.14	0.00	28.00	26-Apr	17:25	7.41	19.7	11,940	0.4	-137.8	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-121	Monitoring	MDB	4	EP	25-Apr	16:50	NA	12.71	0.00	27.32	26-Apr	16:40	7.67	19.6	7,050	0.7	-31.1	9.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-84	Monitoring	MDB	5	EP	25-Apr	16:25	NA	9.22	0.00	20.56	26-Apr	14:15	7.19	19.8	10,620	0.6	-21.0	7.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-122	Monitoring	MDB	6	EP	25-Apr	13:25	NA	10.38	0.00	23.31	26-Apr	15:55	7.22	18.4	11,680	0.5	-57.1	15.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-81	Monitoring	MDB	7	EP	25-Apr	15:20	NA	10.71	0.00	18.63	26-Apr	13:30	7.32	19.2	7,990	2.5	-79.9	3.3	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-80	Monitoring	MDB	8	EP	25-Apr	15:25	NA	8.90	0.00	19.69	26-Apr	12:45	7.12	17.7	9,260	1.6	-161.1	3.1	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-79	Monitoring	MDB	9	EP	25-Apr	15:30	NA	9.84	0.00	19.25	26-Apr	11:55	7.57	17.2	7,260	1.1	-192.4	3.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-82	Monitoring	MDB	10	EP	25-Apr	15:40	NA	9.05	0.00	20.00	25-Apr	16:05	7.41	21.5	8,090	0.7	-47.2	6.2	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-74	Monitoring	MDB	11	EP	25-Apr	14:25	NA	8.81	0.00	20.19	25-Apr	14:50	7.23	21.6	11,810	0.7	-75.7	4.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-73	Monitoring	MDB	12	EP	25-Apr	13:40	NA	8.75	0.00	19.60	25-Apr	14:05	7.51	20.4	11,910	1.1	49.9	28.2	Sl. Cloudy	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-2A	Monitoring	MDB	13	EP	25-Apr	13:15	NA	10.72	0.00	17.31	26-Apr	15:00	7.05	19.0	13,680	0.7	-86.5	3.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-2B	Monitoring	MDB		EP	25-Apr	13:20	NA	10.60	0.00	52.00			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
MW-72	Monitoring	MDB	14	EP	25-Apr	12:30	NA	7.06	0.00	13.92	25-Apr	12:55	7.00	22.9	13,340	0.7	33.0	9.7	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
OCD-6	Monitoring	MDB	15	EP	25-Apr	9:40	NA	10.95	0.00	26.91	25-Apr	10:05	6.87	21.6	15,700	0.6	31.1	7.8	Clear	Yes	Closure	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-7AR	Monitoring	MDB	16	EP	25-Apr	10:30	NA	9.72	0.00	21.29	25-Apr	10:55	7.05	21.7	12,610	0.7	10.4	7.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-7B	Monitoring	MDB	17	EP	25-Apr	11:15	NA	9.57	0.00	56.85	25-Apr	11:50	7.45	22.0	5,870	0.5	-148.9	4.7	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-7C	Monitoring	MDB		EP	25-Apr	12:20	NA	8.99	0.00	71.95			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
RW-#15C [e]	Recovery [d]	MDB	18	REST	25-Apr	9:10	NA	14.74	0.00	22.30	26-Apr	10:00	6.77	20.5	2,720	2.7	-337.9	6.1	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-48	Monitoring	MDB	19	REST	25-Apr	9:15	NA	17.03	0.00	32.00	26-Apr	9:15	6.78	21.0	4,300	1.4	-375.1	8.2	Clear	Yes	Yes	Issue	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-130	Monitoring	MDB	20	REST	25-Apr	9:20	NA	18.89	0.00	45.00	26-Apr	10:50	6.80	21.6	3,200	1.5	-241.0	6.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-4	Monitoring	MDB		REST	25-Apr	9:05	22.96	23.05	0.09	41.75			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-19	Recovery [d]	MDB		REST	25-Apr	9:00	23.16	23.19	0.03	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-76	Monitoring	SCD	21	EP	25-Apr	15:45	NA	10.68	0.00	20.33	26-Apr	16:40	6.92	19.8	7,470	1.4	-89.7	5.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-77	Monitoring	SCD	22	EP	25-Apr	15:50	NA	8.92	0.00	20.52	26-Apr	17:25	6.89	19.2	8,670	2.6	-83.9	6.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-78	Monitoring	SCD	23	EP	25-Apr	15:55	NA	8.92	0.00	19.57	26-Apr	18:05	6.99	19.0	4,830	2.0	54.2	3.5	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-75	Monitoring	SCD	24	EP	25-Apr	16:00	NA	9.08	0.00	23.74	26-Apr	18:50	7.08	19.6	8,310	1.1	-106.5	6.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-83	Monitoring	SCD	25	EP	25-Apr	16:05	NA	8.91	0.00	19.91	26-Apr	15:55	7.01	19.9	6,080	1.2	-123.1	7.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-3	Monitoring	SCD	26	EP	25-Apr	16:10	NA	9.06	0.00	20.18	26-Apr	14:55	7.00	22.9	6,950	1.1	-68.2	8.1	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-88	Monitoring	SCD	27	EP	25-Apr	15:00	NA	8.45	0.00	20.31	26-Apr	10:55	7.01	17.6	8,070	1.2	-70.4	8.4	Clear	Yes	Yes	Hole in pad	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-22A	Monitoring	SCD	28	EP	25-Apr	15:10	NA	7.75	0.00	22.65	26-Apr	11:40	7.01	18.0	9,010	1.2	-35.6	23.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-22B	Monitoring	SCD	29	EP	25-Apr	15:15	NA	7.60	0.00	54.66	26-Apr	12:35	7.04	18.7	7,370	1.2	-47.9	5.8	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-10	Monitoring	SCD	30	EP	25-Apr	15:25	NA	5.20	0.00	18.45	26-Apr	13:20	6.80	19.1	7,190	1.1	-20.8	4.3	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-123	Monitoring	SCD	31	EP	25-Apr	15:35	NA	5.59	0.00	25.71	26-Apr	14:05	6.99	19.2	8,160	1.3	-18.6	7.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-4A	Monitoring	SCD	32	EP	25-Apr	14:45	NA	11.59	0.00	>11.88	26-Apr	9:25	7.15	17.5	7,050	2.4	-178.9	7.1	Clear	Yes	Issue	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-4B	Monitoring	SCD	33	EP	25-Apr	14:50	NA	10.85	0.00	72.37	26-Apr	10:10	7.09	18.8	5,460	3.0	-125.4	4.7	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-5A	Monitoring	SCD	34	EP	25-Apr	12:10	NA	8.18	0.00	20.15	25-Apr	12:35	7.24	21.1	15,520	1.1	-142.1	7.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-5B	Monitoring	SCD	35	EP	25-Apr	13:05	NA	8.34	0.00	53.54	25-Apr	13:30	7.00	21.2	8,970	0.9	-96.1	2.1	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-5C	Monitoring	SCD	36	EP	25-Apr	13:50	NA	8.54	0.00	71.64	25-Apr	14:15	7.21	21.8	4,480	1.1	-93.8	34.5	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-7A	Monitoring	SCD	37	EP	25-Apr	10:30	NA	7.57	0.00	17.25	25-Apr	10:55	7.21	19.2	10,390	1.0	-81.3	9.8	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-7B	Monitoring	SCD	38	EP	25-Apr	11:25	NA	8.87	0.00	52.56	25-Apr	11:50	7.08	21.1	5,810	0.9	-9.3	3.7	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-8A	Monitoring	SCD	39	EP	25-Apr	9:45	NA	8.61	0.00	20.74	25-Apr	10:10	7.06	21.2	13,410	1.2	-145.3	6.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
OCD-8B	Monitoring	SCD	40	EP	25-Apr	9:00	NA	8.77	0.00	56.65	25-Apr	9:25	6.92	21.3	9,820	0.8	-95.3	8.1	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
KWB-P4	Monitoring	BRH	41	REST	25-Apr	11:10	NA	4.36	0.00	30.26	26-Apr	8:55	7.29	16.9	5,610	1.2	83.6	6.8	Clear	Yes	Yes	Yes	Yes		B	B	B	-	B	-	-	-	-	-	-
MW-25	Monitoring	BRH	42	TMD	25-Apr	11:25	NA	11.62	0.00	28.18	26-Apr	15:10	7.28	19.7	14,350	0.5	81.2	1.8	Clear	Yes	Yes	Subsidence	Yes		SA	A	A	-	A	A	-	-	A	A	A
NP-8	Monitoring	BRH		TMD	25-Apr	11:30	NA	12.65	0.00	15.20			Not in sampling program							Issue	Issue	Yes	Yes		SA	Not in samp prgm; gauged to top of protective steel casing									
MW-1R	Monitoring	BRH	43	EP	25-Apr	11:35	NA	10.95	0.00	20.63	26-Apr	16:00	7.23	18.7	12,460	0.5	-122.8	42.6	Clear	Yes	Issue	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-15	Monitoring	BRH	44	EP	25-Apr	11:40	NA	11.85	0.00	21.70	26-Apr	16:50	7.39	20.2	9,810	0.6	45.3	1.7	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
OCD-1R	Monitoring	BRH	45	EP	25-Apr	11:50	NA	12.33	0.00	23.89	26-Apr	14:25	7.22	19.0	10,140	0.7	22.4	3.9	Clear	Yes	Issue	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-2A	Monitoring	BRH	46	EP	25-Apr	11:57	NA	12.42	0.00	27.58	26-Apr	13:40	7.37	19.0	7,270	0.5	-122.8	7.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
OCD-2B	Monitoring	BRH		EP	25-Apr	12:00	NA	11.36	0.00	50.39			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
OCD-3	Monitoring	BRH	47	EP	25-Apr	12:05	NA	12.94	0.00	25.48	26-Apr	12:50	7.23	19.8	8,170	1.1	86.2	5.7	Clear	Yes	Yes	Pad destryd	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
OCD-4	Monitoring	BRH	48	EP	25-Apr	12:10	NA	12.20	0.00	25.42	26-Apr	9:50	7.33	18.8	13,230	0.6	-5.7	17.9	Clear	Yes	Yes	Subsidence	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-11A	Monitoring	BRH	49	EP	25-Apr	12:15	NA	9.69	0.00	22.01	26-Apr	11:20	7.02	19.0	27,800	0.7	-3.4	8.1	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	SA	SA	SA
MW-11B	Monitoring	BRH	50	EP	25-Apr	12:18	NA	9.66	0.00	47.30	26-Apr	12:05	7.17	19.8	18,660	0.8	-82.7	2.2	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-5	Monitoring	BRH	51	EP	25-Apr	12:25	NA	10.40	0.00	25.42	26-Apr	10:35	7.40	18.9	14,720	0.6	-52.6	36.1	Sl. Cloudy	Yes	Yes	Pad cracked	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-87	Monitoring	BRH	52	EP	25-Apr	12:50	NA	8.58	0.00	20.39	25-Apr	17:20	7.34	20.4	15,230	0.6	-122.9	1.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-18A	Monitoring	BRH	53	EP	25-Apr	13:00	NA	10.29	0.00	22.58	25-Apr	13:30	7.16	21.2	6,730	0.6	-152.7	1.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-18B	Monitoring	BRH	54	EP	25-Apr	13:50	NA	10.72	0.00	50.59	25-Apr	14:20	7.03	22.5	4,940	0.6	-5.3	0.7	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-18T	Monitoring	BRH		EP	25-Apr	12:55	NA	10.06	0.00	50.39			Not in sampling program							Issue	Issue	Issue	Yes		SA	Not in samp prgm; gauged to highest pointt of shattered PVC									
MW-70	Monitoring	BRH	55	EP	25-Apr	14:55	NA	8.10	0.00	22.05	25-Apr	15:20	7.16	21.4	6,320	0.5	-82.9	8.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-124	Monitoring	BRH	56	EP	25-Apr	15:55	NA	9.62	0.00	22.01	25-Apr	16:20	7.20	19.6	11,660	0.6	-94.1	19.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-52	Monitoring	BRH	57	REST	25-Apr	9:09	NA	17.74	0.00	34.67	27-Apr	8:55	6.84	21.2	5,250	0.7	114.9	3.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-109	Monitoring	BRH	58	REST	25-Apr	9:04	NA	16.01	0.00	29.48	27-Apr	9:40	6.82	22.8	3,370	0.4	-369.2	4.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-110	Monitoring	BRH	59	REST	25-Apr	9:00	NA	13.99	0.00	29.74	27-Apr	10:25	7.05	22.6	1,827	0.5	-349.9	6.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-13	Monitoring	BRH		EP	25-Apr	10:16	NA	12.40	0.00	21.10			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-69	Monitoring	BRH		EP	25-Apr	10:10	NA	11.53	0.00	22.50			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-12	Monitoring	BRH		EP	25-Apr	10:05	NA	10.76	0.00	17.93			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-24	Monitoring	BRH		EP	25-Apr	9:45	NA	12.46	0.00	23.51			Not in sampling program							Yes	Yes	Issue	Yes		SA	No sampling due to location E. of river									
MW-14	Monitoring	BRH		EP	25-Apr	9:55	NA	11.84	0.00	>11.93			Not in sampling program							Yes	Issue	Yes	Yes		SA	No sampling due to location N. of river									
RW-12	Recovery [d]	BTB	Field E of Refinery				Not in gauging program						Not in sampling program												-	-	-	-	-	-	-	-	-	-	-
RW-12R	Recovery [d]	BTB	60	REST	25-Apr	12:49	NA	21.04	0.00	NM	27-Apr	12:30	9.01	19.7	3,861	0.2	-210.1	8.6	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-113	Monitoring	BTB	61	REST	25-Apr	12:59	NA	20.98	0.00	37.80	27-Apr	9:10	6.53	21.7	2,920	2.0	-49.6	5.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-8	Monitoring	BTB	62	REST	25-Apr	17:10	19.26	19.27	0.01	35.80	25-Apr	17:35	6.76	21.2	3,622	0.9	-197.7	7.4	Clear	Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	-	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
RW-22	Recovery [d]	BTB		REST	25-Apr	16:58	26.68	29.13	2.45	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-20A	Recovery [d]	BTB		REST	25-Apr	16:35	>19.98	>19.98	NM	NM			NM=Unable to gauge thickness, however, LNAPL through port							NA	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-20B	Recovery [d]	BTB		REST	25-Apr	16:45	20.30	>20.48	>0.18	NM			Top of pump prevented LNAPL thickness measurement							NA	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-13	Recovery [d]	BTB	Field E of Refinery				Not in gauging program						Not in sampling program											Y	-	-	-	-	-	-	-	-	-	-	-
RW-13R	Recovery [d]	BTB		REST	25-Apr	13:10	19.53	19.64	0.11	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-14	Recovery [d]	BTB	Field E of Refinery				Not in gauging program						Not in sampling program											Y	-	-	-	-	-	-	-	-	-	-	-
RW-14R	Recovery [d]	BTB		REST	25-Apr	13:18	16.92	17.98	1.06	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-133	Monitoring	BTB		REST	25-Apr	13:27	16.77	17.06	0.29	37.64			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-134	Monitoring	BTB	63	REST	25-Apr	13:45	NA	14.16	0.00	32.95	26-Apr	8:45	6.61	18.7	5,047	0.9	106.1	4.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RA-4798	Irrigation	BTB	64	REST			Not in gauging program			NA	26-Apr	9:25	7.08	19.6	1,150	1.5	79.5	1.1	Clear	NA	NA	Yes	Yes		NA	SA	-	-	SA	-	-	-	SA	SA	SA
RA-4196	Irrigation	BTB	65	REST			Not in gauging program			NA	26-Apr	9:45	7.18	22.5	1,968	1.7	51.8	1.7	Clear	NA	NA	Yes	Yes		NA	SA	-	-	SA	-	-	-	SA	SA	SA
RA-1227	Irrigation	BTB		REST			Removed from program by Navajo, 4-13-15						Removed from program by Navajo, 4-13-15												NA	A [h]	-	-	A [h]	-	-	-	A [h]	A [h]	A [h]
RA-3156	Irrigation	BTB	66	REST			Not in gauging program			NA	26-Apr	10:15	6.84	20.5	2,862	4.2	-46.3	134.0	Cloudy	NA	NA	NA	Yes		NA	A	-	-	A	-	-	-	A	A	A

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refinery Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
RA-313	Irrigation	BTB	67	REST			Not in gauging program			NA	27-Apr	9:30	7.08	20.7	1,303	3.1	-68.4	1.2	Clear	NA	NA	NA	Yes		NA	A	-	-	A	-	-	-	A	A	A
KWB-7	Monitoring	BTB	68	REST	25-Apr	12:32	NA	18.54	0.00	34.83	25-Apr	18:20	6.77	20.2	3,389	0.8	-105.9	7.6	Clear	Yes	Yes	Needs pad	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-135	Monitoring	BTB	69	REST	25-Apr	12:09	NA	26.53	0.00	65.55	26-Apr	16:50	6.69	18.3	7,337	3.4	157.9	66.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-20	Monitoring	BTB	70	TMD	25-Apr	15:00	NA	10.28	0.00	26.66	27-Apr	10:20	7.04	22.0	5,310	1.7	42.3	4.1	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
NP-3	Monitoring	BTB		TMD	25-Apr	13:56	NA	11.74	0.00	21.59			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-4	Monitoring	BTB		TMD	25-Apr	14:02	NA	17.79	0.00	36.98			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-2	Monitoring	BTB		TMD	25-Apr	14:12	NA	12.83	0.00	21.49			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-1	Monitoring	BTB	71	TMD	25-Apr	14:20	NA	13.44	0.00	21.88	26-Apr	18:20	7.76	18.2	4,726	1.1	137.1	1.7	Clear	Yes	Yes	Yes	Yes		SA	SA	-	-	SA	-	-	-	A	A	A
NP-6	Monitoring	BTB	72	TMD	25-Apr	14:29	NA	10.23	0.00	20.35	26-Apr	17:40	6.56	17.7	6,222	0.9	89.1	3.7	Clear	Yes	Yes	Yes	Yes		SA	B	-	-	B	-	-	-	-	-	-
MW-8	Monitoring	BTB	73	TMD	25-Apr	14:52	NA	9.04	0.00	20.12	27-Apr	11:50	7.21	21.4	4,170	1.4	43.1	4.1	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-21	Monitoring	BTB	74	TMD	25-Apr	14:49	NA	10.41	0.00	25.12	27-Apr	11:05	7.10	21.2	5,620	1.3	51.9	2.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-9	Monitoring	BTB		TMD	25-Apr	14:42	NA	9.51	0.00	20.19			Not in sampling program							Yes	Yes	Cracked pad	Yes		SA	Not in sampling program									
MW-71	Monitoring	BTB	75	TMD	25-Apr	14:34	NA	11.71	0.00	21.87	26-Apr	11:05	6.95	17.7	6,416	2.4	122.9	3.1	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-68	Monitoring	BTB	76	TMD	25-Apr	11:02	NA	15.46	0.00	26.52	26-Apr	11:55	6.95	19.7	3,279	0.5	121.4	5.2	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-27	Monitoring	BTB	77	TMD	25-Apr	11:28	NA	16.06	0.00	30.28	26-Apr	15:55	6.53	20.9	2,785	0.7	87.3	5.5	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-89	Monitoring	BTB	78	TMD	25-Apr	11:39	NA	9.78	0.00	20.28	26-Apr	14:55	6.95	17.9	4,109	1.7	52.7	7.2	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-16	Monitoring	BTB	79	TMD	25-Apr	11:47	NA	8.18	0.00	21.24	26-Apr	14:00	6.85	17.6	7,046	0.8	117.1	5.4	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-26	Monitoring	BTB	80	TMD	25-Apr	11:56	NA	9.39	0.00	27.58	26-Apr	12:55	6.89	17.5	9,022	0.6	101.9	3.8	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-11A	Monitoring	BTB	81	REST	25-Apr	12:17	NA	19.14	0.00	42.27	25-Apr	19:10	6.69	19.1	6,244	0.9	-12.3	2.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-11B	Monitoring	BTB	82	REST	25-Apr	12:21	NA	19.88	0.00	72.45	25-Apr	20:00	6.88	18.6	2,962	0.8	69.2	1.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-3AR	Monitoring	BTB		REST			Removed from program by Navajo, 4-14-15 (farmer Jack Joy, 575-365-6042)																		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-115	Monitoring	BTB	83	REST	25-Apr	10:48	NA	5.43	0.00	27.50	27-Apr	10:40	6.80	17.5	4,217	1.1	92.3	1.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-114	Monitoring	BTB	84	REST	25-Apr	10:40	NA	3.63	0.00	38.25	27-Apr	11:30	6.91	19.7	3,669	0.9	149.1	5.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-117	Monitoring	GDS	85	REST	25-Apr	17:45	NA	9.19	0.00	27.22	26-Apr	8:55	6.80	15.8	3,740	0.8	80.0	58.0	Sl. Cloudy	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-118	Monitoring	GDS	86	REST	25-Apr	17:51	NA	11.69	0.00	28.29	26-Apr	9:40	6.89	15.5	4,220	4.0	94.7	9.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
NP-9	Monitoring	GDS		TMD	25-Apr	17:58	NA	10.69	0.00	25.89			Not in sampling program							Yes	Issue	Issue	Yes		SA	Not in sampling program									
MW-119	Monitoring	GDS	87	REST	25-Apr	18:07	NA	10.41	0.00	28.11	26-Apr	10:25	6.81	16.1	3,950	0.9	82.9	8.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
NP-5	Monitoring	GDS	88	REST	25-Apr	13:45	NA	11.56	0.00	25.09	25-Apr	14:10	7.04	18.8	5,410	1.7	102.5	5.0	Clear	Yes	Yes	Yes	Yes		SA	B	B	-	B	B	-	-	B	B	B
MW-136	Monitoring	GDS	89	REST	25-Apr	12:55	NA	11.11	0.00	27.90	25-Apr	13:20	6.83	19.2	4,490	1.4	109.5	7.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-126A	Monitoring	GDS	90	REST	25-Apr	15:49	NA	12.20	0.00	37.51	27-Apr	9:20	6.62	19.4	3,550	0.9	-181.3	7.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-126B	Monitoring	GDS	91	REST	25-Apr	15:52	NA	12.09	0.00	51.45	27-Apr	10:00	6.64	18.9	4,240	0.7	12.5	8.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-127	Monitoring	GDS	92	REST	25-Apr	15:41	NA	17.43	0.00	53.21	27-Apr	10:50	6.75	20.6	2,830	0.8	-276.1	5.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-129	Monitoring	GDS	93	REST	25-Apr	15:25	NA	20.80	0.00	53.08	27-Apr	11:40	6.70	22.5	2,270	1.4	-206.5	6.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-#18A [e]	Recovery [d]	GDS	94	REST	25-Apr	12:10	NA	10.09	0.00	17.78	25-Apr	12:35	7.08	18.7	4,400	2.0	95.2	0.9	Clear	Yes	Yes	Yes	Yes		SA	A	-	-	A	A	-	-	A	A	A
KWB-1A	Monitoring	GDS	95	REST	25-Apr	10:45	NA	12.20	0.00	33.50	25-Apr	11:15	6.71	19.7	5,390	0.8	57.3	4.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
KWB-1B	Monitoring	GDS		REST	25-Apr	10:48	NA	13.85	0.00	33.92			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
KWB-1C	Monitoring	GDS	96	REST	25-Apr	10:50	NA	14.42	0.00	52.71	25-Apr	11:50	6.73	19.7	5,370	1.6	90.1	1.1	Clear	Yes	Yes	Yes	Yes		SA	B	B	-	B	B	-	-	B	B	B
KWB-10R	Monitoring	GDS	97	REST	25-Apr	10:05	NA	15.31	0.00	29.46	25-Apr	10:30	6.60	20.6	1,897	0.9	-163.2	6.2	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-131	Monitoring	GDS	98	REST	25-Apr	15:33	NA	22.00	0.00	53.35	27-Apr	11:10	6.78	22.7	2,008	0.6	-218.1	7.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-5	Monitoring	GDS	99	REST	25-Apr	15:18	NA	22.28	0.00	37.68	26-Apr	16:40	6.61	21.1	2,940	2.3	-146.0	3.6	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-111	Monitoring	GDS	100	REST	25-Apr	15:12	NA	23.40	0.00	40.83	26-Apr	15:35	6.62	21.0	2,980	2.0	-101.1	8.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-6	Monitoring	GDS	101	REST	25-Apr	14:58	NA	21.02	0.00	36.44	26-Apr	14:35	6.81	20.2	2,400	0.9	-275.6	2.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-112	Monitoring	GDS		REST	25-Apr	15:04	20.05	20.37	0.32	37.54			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-132	Monitoring	GDS		REST	25-Apr	14:50	18.58	18.84	0.26	42.66			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-57	Monitoring	GDS	102	REST	25-Apr	14:35	NA	19.91	0.00	34.32	26-Apr	13:45	6.71	19.2	5,040	1.0	103.6	14.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-#11-0 [e]	Recovery [d]	GDS		REST	25-Apr	14:42	NA	22.08	0.00	22.20			Not sampled due to lack of water column available							Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-9	Monitoring	GDS		REST			Historically-obstructed @ 15.11'						Removed from program by Navajo, 4-26-16 (farmer Jack Joy, 575-365-6042)												SA [h]	A [h]	A [h]	-	A [h]	A [h]	A [h]	A [h]	A [h]	A [h]	A [h]
KWB-12A	Monitoring	GDS	103	REST	25-Apr	9:35	NA	22.71	0.00	25.03	26-Apr	12:10	6.79	18.9	3,770	3.5	101.1	1.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-12B	Monitoring	GDS	104	REST	25-Apr	9:39	NA	22.52	0.00	39.39	26-Apr	12:50	6.84	18.6	3,870	4.3	80.8	0.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-2R	Monitoring	GDS	105	REST	25-Apr	16:50	NA	21.13	0.00	39.41	25-Apr	17:15	6.85	21.0	3,220	1.6	-202.7	1.1	Clear	Yes	Yes	Yes	Yes		SA [h]	SA [d, h]	SA [d, h]	-	SA [d, h]	SA [d, h]	-	-	SA [d, h]	SA [d, h]	SA [d, h]
MW-58	Monitoring	GDS	106	REST	25-Apr	16:05	NA	20.12	0.00	33.06	25-Apr	16:30	6.82	20.6	2,340	1.6	-246.0	8.0	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
KWB-13	Monitoring	GDS	107	REST	25-Apr	9:05	NA	24.51	0.00	33.10	26-Apr	11:20	6.89	18.0	3,980	3.7	102.9	>200	Cloudy	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-103	Monitoring	SCU	108	REST	25-Apr	14:20	NA	17.10	0.00	25.22	25-Apr	14:45	7.39	31.6	33,300	1.9	-329.1	2.8	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-104	Monitoring	SCU	109	REST	25-Apr	15:10	NA	16.48	0.00	21.97	25-Apr	15:35	7.14	24.5	1,750	1.5	-329.2	3.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-64	Monitoring	SCU	110	REST	25-Apr	12:35	NA	18.50	0.00	34.08	25-Apr	13:00	7.24	30.6	2,540	1.4	-375.3	3.7	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-65	Monitoring	SCU	111	REST	25-Apr	13:25	NA	14.32	0.00	28.78	25-Apr	13:50	7.06	27.3	2,120	1.5	-227.7	7.5	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-5	Recovery [d]	SCU		S Refinery			Not in gauging program						Not in sampling program											Y	-	-	-	-	-	-	-	-	-	-	-
RW-5R	Recovery [d]	SCU		REST	25-Apr	17:00	14.72	14.85	0.13	35.30			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-102	Monitoring	SCU	112	REST	25-Apr	16:35	NA	13.95	0.00	26.45	26-Apr	9:25	7.07	22.7	2,180	1.6	-320.6	6.3	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-4	Recovery [d]	SCU	113	REST	25-Apr	16:25	NA	12.48	0.00	36.62	26-Apr	13:10	7.25	24.3	2,190	1.1	-318.8	4.6	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
RW-6	Recovery [d]	SCU		REST	25-Apr	16:50	13.55	13.62	0.07	34.90			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-99	Monitoring	SCU	114	REST	25-Apr	17:15	NA	16.02	0.00	27.80	26-Apr	10:20	6.96	22.6	2,040	1.3	-317.3	7.0	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-66	Monitoring	SCU	115	REST	25-Apr	17:20	NA	15.00	0.00	29.80	26-Apr	11:15	7.25	22.5	1,504	2.1	-224.8	4.2	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-28	Monitoring	SCU	116	REST	25-Apr	15:30	NA	20.31	0.00	34.55	26-Apr	12:10	6.87	23.4	3,150	1.4	-334.1	5.0	Clear	Yes	Issue	Issue	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-59	Monitoring	SCU	117	REST	25-Apr	17:40	NA	5.85	0.00	32.72	27-Apr	9:25	6.97	24.5	3,040	1.8	-252.4	4.0	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-60	Monitoring	SCU	118	REST	25-Apr	17:50	NA	7.11	0.00	37.78	27-Apr	10:15	6.99	24.8	3,510	1.4	-307.2	3.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-107	Monitoring	SCU	119	REST	25-Apr	18:00	NA	9.91	0.00	19.05	26-Apr	15:10	7.11	23.0	1,957	1.6	-107.6	4.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-128	Monitoring	SCU	120	REST	26-Apr	13:40	NA	12.96	0.00	35.35	26-Apr	14:10	6.90	23.0	1,990	1.6	-63.2	12.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-125	Monitoring	SCU	121	REST	25-Apr	18:25	NA	6.48	0.00	28.31	26-Apr	16:00	7.09	21.1	4,130	1.3	65.3	3.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-116	Monitoring	SCU	122	REST	25-Apr	18:30	NA	7.06	0.00	27.63	26-Apr	16:55	7.27	15.8	3,480	1.2	6.7	14.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-46R	Monitoring	SCU	123	TMD	25-Apr	18:35	NA	4.29	0.00	19.36	27-Apr	11:40	7.02	24.2	3,820	2.3	40.8	13.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
UG-3R	Monitoring	SCU	124	REST	25-Apr	9:15	NA	24.62	0.00	38.58	25-Apr	9:40	7.05	23.2	2,260	5.1	175.2	3.6	Clear	Yes	Yes	Yes	Yes		A	A	A	A	A	A	A	A	A	A	A
UG-4	Monitoring	SCU	125	REST	25-Apr	10:00	NA	18.09	0.00	39.24	25-Apr	10:25	7.02	24.1	3,770	4.1	176.4	4.5	Clear	Yes	Yes	Yes	Yes		A	A	A	A	A	A	A	A	A	A	A
UG-1	Monitoring	SCU	126	REST	25-Apr	10:55	NA	13.22	0.00	24.08	25-Apr	11:20	7.35	25.9	2,940	5.5	167.3	3.9	Clear	Yes	Yes	Yes	Yes		A	A	A	A	A	A	A	A	A	A	A
UG-2	Monitoring	SCU	127	REST	25-Apr	11:45	NA	17.42	0.00	29.28	25-Apr	12:10	7.45	25.7	2,220	5.0	156.7	4.1	Clear	Yes	Yes	Yes	Yes		A	A	A	A	A	A	A	A	A	A	A
MW-101	Monitoring	TAB	128	REST	25-Apr	15:10	NA	12.27	0.00	26.85	27-Apr	9:45	6.60	22.0	2,110	1.2	-137.1	6.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-105	Monitoring	TAB	129	REST	25-Apr	15:00	NA	8.60	0.00	17.20	26-Apr	8:25	7.89	20.5	1,358	1.0	-379.3	8.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-2	Recovery [d]	TAB	130	REST	25-Apr	14:10	10.19	10.20	0.01	36.13	26-Apr	13:15	7.17	24.0	3,570	0.8	-388.2	4.2	Clear	Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-61	Monitoring	TAB	131	REST	25-Apr	14:40	NA	10.03	0.00	29.30	26-Apr	9:35	7.58	22.9	2,650	0.9	-354.4	7.7	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-62	Monitoring	TAB	132	REST	25-Apr	14:30	NA	10.84	0.00	29.50	26-Apr	10:20	7.33	22.4	3,590	0.9	-380.2	3.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-93	Monitoring	TAB	133	REST	25-Apr	14:00	NA	5.83	0.00	20.23	26-Apr	12:15	7.22	21.1	2,920	0.7	-373.2	3.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-43	Monitoring	TAB	134	REST	25-Apr	11:00	NA	7.03	0.00	19.67	25-Apr	11:25	7.41	24.0	4,620	1.0	-400.6	7.0	Clear	Yes	Issue	No pad	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-137	Monitoring	TAB	135	REST	25-Apr	13:00	NA	5.04	0.00	29.60	25-Apr	13:25	7.03	26.7	5,270	1.7	-406.9	6.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-138	Monitoring	TAB	136	REST	25-Apr	12:00	NA	6.78	0.00	24.81	25-Apr	12:25	7.01	30.9	3,160	1.0	-361.1	6.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-23	Monitoring	TAB	137	REST	25-Apr	13:50	NA	10.31	0.00	23.10	26-Apr	11:15	7.59	25.6	2,870	1.2	-342.2	7.7	Clear	Yes	Issue	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-4	Monitoring	TAB	138	TEL	25-Apr	15:40	NA	5.81	0.00	27.27	27-Apr	10:55	6.74	20.7	5,170	0.8	-383.7	5.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-3	Monitoring	TAB	139	TEL	25-Apr	15:50	NA	4.78	0.00	27.19	27-Apr	11:50	6.72	21.1	2,310	0.5	-394.9	4.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-2	Monitoring	TAB	140	TEL	25-Apr	16:00	NA	5.45	0.00	27.20	27-Apr	10:45	7.34	23.9	3,240	0.7	-359.1	4.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-1	Monitoring	TAB	141	TEL	25-Apr	16:10	NA	4.66	0.00	27.00	27-Apr	8:55	7.74	22.2	3,070	0.4	-297.9	3.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-39	Monitoring	TAB	142	REST	25-Apr	16:20	NA	5.25	0.00	25.44	26-Apr	19:20	7.68	21.8	4,430	0.9	-345.6	3.0	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-98	Monitoring	TAB	143	REST	25-Apr	10:00	NA	6.48	0.00	25.60	25-Apr	10:25	7.47	23.1	3,140	1.1	-385.0	5.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-10	Recovery [d]	TAB	144	REST	27-Apr	9:30	NA	4.99	0.00	22.49	27-Apr	9:55	8.16	21.8	2,530	0.2	-368.4	4.6	Clear	Yes	Yes	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-40	Monitoring	TAB	145	REST	25-Apr	16:30	NA	3.30	0.00	24.75	27-Apr	12:10	6.91	24.3	3,220	0.9	-353.8	9.8	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-41	Monitoring	TAB	146	REST	25-Apr	16:40	NA	3.41	0.00	21.56	26-Apr	18:25	7.47	21.1	3,330	0.8	-118.9	3.7	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
RW-9	Recovery [d]	TAB	147	REST	27-Apr	10:50	NA	5.74	0.00	21.83	27-Apr	11:15	6.91	23.2	3,870	1.4	-355.8	4.8	Clear	Yes	Yes	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-42	Monitoring	TAB	148	REST	25-Apr	16:50	NA	6.60	0.00	24.32	26-Apr	16:25	7.54	20.6	3,850	0.8	-293.5	1.6	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-29	Monitoring	TAB	149	REST	25-Apr	17:40	NA	7.49	0.00	22.00	26-Apr	17:25	7.62	21.2	3,400	0.7	-295.9	0.8	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-#16B [e]	Recovery [d]	TAB	150	REST	25-Apr	17:20	NA	9.78	0.00	17.70	26-Apr	15:25	7.71	20.8	4,510	0.8	-226.7	1.0	Clear	Yes	Yes	Issue	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-30	Monitoring	TAB		REST	25-Apr	17:00	NA	8.30	0.00	23.50			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
MW-56	Monitoring	TAB	151	NCL	25-Apr	17:10	NA	9.55	0.00	26.50	26-Apr	14:25	7.38	21.8	4,160	1.0	-290.9	1.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-49	Monitoring	TAB	152	TEL	25-Apr	15:30	NA	7.60	0.00	33.15	27-Apr	10:30	7.05	23.3	3,240	0.8	-332.1	6.3	Clear	Yes	Non-std	Bad Hinge	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-106	Monitoring	TAB	153	REST	25-Apr	9:00	NA	5.70	0.00	22.80	25-Apr	9:25	7.31	23.7	3,000	0.6	-374.2	3.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-45	Monitoring	TAB	154	NCL	25-Apr	17:50	NA	4.10	0.00	15.05	25-Apr	18:20	7.67	20.7	4,780	1.2	-200.4	22.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-50	Monitoring	CJH	155	REST	25-Apr	11:35	NA	14.24	0.00	28.22	25-Apr	12:00	6.89	23.1	7,040	1.0	87.4	3.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-97	Monitoring	CJH		REST	25-Apr	12:20	8.20	8.23	0.03	21.20			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-92	Monitoring	CJH		REST	25-Apr	12:31	10.15	10.19	0.04	22.60			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-1	Recovery [d]	CJH	156	REST	25-Apr	12:40	NA	9.09	0.00	35.39	25-Apr	13:05	6.77	22.2	3,860	1.0	-346.1	20.2	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-91	Monitoring	CJH	157	REST	25-Apr	13:25	NA	9.53	0.00	25.35	25-Apr	13:50	6.72	23.0	2,320	1.0	-408.0	8.5	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-90	Monitoring	CJH	158	REST	25-Apr	14:05	NA	10.47	0.00	22.80	25-Apr	14:30	6.93	21.0	4,960	1.0	-336.0	7.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-96	Monitoring	CJH	159	REST	25-Apr	14:45	NA	10.28	0.00	25.57	25-Apr	15:10	6.75	22.2	2,130	1.5	-386.0	8.7	Clear	Yes	Closure	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-94	Monitoring	CJH	160	REST	25-Apr	15:25	NA	10.52	0.00	23.45	26-Apr	14:20	6.94	21.2	3,170	1.5	-442.0	3.9	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-8	Recovery [d]	CJH	161	REST	25-Apr	15:36	NA	9.96	0.00	37.22	26-Apr	15:05	6.69	21.8	2,220	1.0	-354.5	27.8	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-67	Monitoring	CJH	162	REST	25-Apr	15:45	NA	8.18	0.00	27.30	26-Apr	16:15	6.89	21.3	2,560	1.4	-396.8	5.3	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
MW-95	Monitoring	CJH	163	REST	25-Apr	15:53	NA	11.02	0.00	25.37	26-Apr	17:10	6.86	22.6	2,380	1.4	-369.0	2.9	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
RW-7	Recovery [d]	CJH	164	REST	25-Apr	16:04	NA	15.61	0.00	37.00	26-Apr	13:35	6.77	23.5	6,840	1.0	-184.5	8.8	Clear	Yes	Yes	Yes	Yes		SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
NCL-34A	Monitoring	CJH	165	NCL	25-Apr	16:13	NA	9.81	0.00	19.31	26-Apr	12:50	6.58	21.3	2,110	1.3	-378.3	2.4	Clear	Issue	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
NCL-33	Monitoring	CJH	166	NCL	25-Apr	16:21	NA	7.89	0.00	19.60	26-Apr	12:10	6.66	20.8	3,030	1.5	38.4	7.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
NCL-44	Monitoring	CJH	167	NCL	25-Apr	16:29	NA	8.12	0.00	21.57	26-Apr	11:25	6.63	19.6	2,560	1.5	-256.2	7.5	Clear	Issue	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
NCL-32	Monitoring	CJH	168	NCL	25-Apr	16:39	NA	8.26	0.00	20.06	26-Apr	10:35	6.97	19.2	2,440	1.8	-26.5	16.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-108	Monitoring	CJH	169	NCL	25-Apr	17:10	NA	12.31	0.00	27.74	26-Apr	9:05	6.86	19.1	2,470	1.6	-383.5	7.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
NCL-31	Monitoring	CJH	170	NCL	25-Apr	16:48	NA	8.91	0.00	20.16	26-Apr	9:50	7.01	18.4	3,050	1.2	-150.5	6.4	Clear	Issue	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-19	Monitoring	CJH		NCL	25-Apr	16:57	NA	9.27	0.00	22.08			Not in sampling program							Yes	Issue	Issue	Yes		SA	Not in sampling program									
MW-55	Monitoring	CJH	171	NCL	25-Apr	17:31	NA	9.73	0.00	26.58	27-Apr	10:00	6.70	20.7	3,380	1.6	-142.6	6.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
RW-#17A [e]	Recovery [d]	CJH	172	REST	25-Apr	17:40	NA	9.02	0.00	16.02	26-Apr	17:55	6.81	19.3	5,050	1.2	-237.6	6.3	Clear	Yes	Issue	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-18	Monitoring	CJH	173	NCL	25-Apr	17:23	NA	9.55	0.00	22.20	27-Apr	9:15	6.92	20.3	3,010	2.4	41.6	4.7	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-54A	Monitoring	CJH	174	NCL	25-Apr	10:50	NA	10.39	0.00	31.30	25-Apr	11:15	6.62	23.2	2,110	1.7	75.0	4.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-54B	Monitoring	CJH	175	NCL	25-Apr	10:10	NA	10.37	0.00	46.80	25-Apr	10:35	6.76	21.8	2,040	1.2	74.1	4.5	Clear	Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
NCL-49	Monitoring	CJH	176	NCL	25-Apr	9:20	NA	14.03	0.00	32.18	25-Apr	9:45	6.93	21.4	3,030	1.3	76.5	4.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-53	Monitoring	CJH	177	NCL	25-Apr	8:40	NA	9.54	0.00	23.60	25-Apr	9:05	6.87	21.0	2,690	1.6	79.6	2.5	Clear	Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-P3	Monitoring		Field E of Refinery				Not in gauging program						Not in sampling program												Not included in monitoring program due to distance from impacts									

Notes:

Abbreviations:

A = Annual (Mar/Apr event)
B = Biennial (starts Mar/Apr 2011)
BR = Bolton Road
DRO = Diesel Range Organics
E = East
EP = Evaporation Ponds
ft bgs = ft below ground surface
ft btoc = ft below top of casing
ft MSL = ft Mean Sea Level
GRO = Gasoline Range Organics
HR = Haldeman Road
in = inches
N = North
NA = Not accessible
NAPI = North API Separator
NCL = North Colony Landfarm
NE = Northeast
NW = Northwest
OCD = Oil Conservation District
PSH = Phase Separated Hydrocarbon
ROW = right of way
RR = Richey Road
S = South
SA = Semi-annual (Mar/Apr and Sep/Oct events)
SE = Southeast
SW = Southwest
TMD = Three Mile Ditch
TEL = Tetra Ethyl Lead Impoundment
UG = Upgradient
US285 = U.S. Highway 285
US82 = U.S. Highway 82
VOC = Volatile Organic Compounds
W = West
Y = Yes

Footnotes:

[a] Well const. info. provided where available. TOC & ground surface elevs relative to benchmark G-416. Total depth based on 4/2010 measurements.

[b] PSH was present during March 2012 gw monitoring event or a recovery pump is in place. Note that recovery wells are gauged at least monthly.

[c] Analytical Suite to include the following:

1. Purge parameters to be measured and recorded in the field will include pH, temp, spec. cond., diss. oxy., and oxidation-reduction potential.
2. DRO by Method 8015Mod.
3. GRO by Method 8015Mod.
4. VOCs by Method 8260, to include methyl tert butyl ether (MTBE).
5. Total metals by Method 6010/6020 and/or 7470. Specific metals shown in heading, abbreviations from periodic chart (incl B, Cd, Co, U, per 3-7-16 State request).
6. Dissolved metals - same list as total metals but only analyzed during April event (field filtered by HMI)
7. Cyanide by Method SM4500.
8. Cations/anions to include Calcium, Potassium, and Sodium by Method 6010 or 6020 and Sulfate, Chloride and Fluoride by Method 300.
9. Nitrates/Nitrites as Nitrogen by Method 300.
10. Total Dissolved Solids by Method 2540C.

"-" indicates parameter not required.

Note - samples will not be collected from any well where PSH is measured to be 0.03 feet thick or greater.

[d] Samples to be collected at frequency indicated only if <0.03 feet of PSH is present.

[e] Recovery trenches 11, 15, 16, 17 and 18 have multiple vertical "wells". Gauging & sampling points are: RW #11-0, RW #15C, RW #16B, RW #17A and RW #18A.

= Well with recently gauged LNAPL (light nonaqueous phase liquid)

HMI
Groundwater

Hydrologic Monitoring
1654 W. Sam Houston Pkwy. N.
Houston, Texas 77043

Phone 713.464.5206
Fax 713.464.5207

M E M O R A N D U M

Groundwater Monitoring Standard Operating Procedures
Navajo Refining Company – Artesia, New Mexico

HMI conducts low-flow groundwater sampling in accordance with the Site's Sampling and Analysis Plan and EPA guidance (including Puls and Barcelona, 1996 EPA Guidance on Low-Flow Groundwater Sampling, and Yeskis & Zavala, 2002, EPA/542:S-02/00, Groundwater Sampling Guidelines for Superfund and RCRA Project Managers).

Groundwater Sampling Methodology

HMI conducts low-flow groundwater sampling using a peristaltic pump and dedicated polyethylene tubing at wells with requisite depths-to-water. At limited wells with depths-to-water greater than peristaltic range, low-flow groundwater sampling is conducted using dedicated or non-dedicated bladder pumps. Sample intakes are generally set at mid-screen, when possible (and no nearer than two feet from the base of the well, when possible). Sample intake depths are permanently marked, ensuring that future sampling events consistently monitor the targeted water-bearing interval. During sampling with a peristaltic pump, the sample tube is attached to the pump using a one-foot section of dedicated, flexible silicone tubing (item #5703, Geotech Environmental Equipment, Inc.). A two-foot segment of polyethylene tubing connects the silicone tubing in the pump to the flow-through cell, using a disposable segment of silicone tubing. Purging commences through a sealed flow-through cell at EPA-recommended purge rates (generally 0.1 to 0.2 liters/minute), while drawdown is monitored in the well. Groundwater field parameter readings are collected at 0.5-liter intervals (generally the equivalent of one cell volume "turnover"). Field parameters of pH, specific conductivity, temperature, dissolved oxygen, and oxidation-reduction potential are monitored inside the cell. Turbidity is monitored outside of the cell. Groundwater field instrumentation is calibrated daily, per manufacturer specifications. The field instrument calibration log is included in the HMI deliverables package. Purging continues until a requisite volume of groundwater is purged (generally a minimum of 3,000 ml or six flow-through cell volumes), and field parameters have stabilized in accordance with EPA guidance:

Water Quality Parameters (Stabilization Parameters in Accordance with EPA (2002), Groundwater Sampling Guidelines for Superfund and RCRA Project Managers, Yeskis & Zavala, EPA/542:S-02/001)

- pH +/- 0.1 units;
- Temperature -
- Conductivity +/- 3%
- Dissolved Oxygen +/- 0.3 mg/L
- ORP +/- 10%
- Turbidity 10%

Just prior to sampling, the input tubing to the flow-through cell is disconnected from the disposable silicone receiving tubing on the input barb on the flow-through cell, and groundwater samples are collected directly into laboratory-supplied containers. Groundwater samples are placed in iced coolers, and remain in HMI's custody until delivered to ESC Lab Sciences via FedEx-overnight. Peristaltic tubes and/or downhole bladder pumps/tubing for non-dedicated bladder pumps, may be dedicated in respective wells. Alternatively, dedicated tubing may be retrieved, bagged, labeled and stored at HMI. In the unlikely event of wells with limited water columns, sampling may be conducted with disposable bailers. Grab samples are collected at operating recovery wells and irrigation wells scheduled for sampling. The purging and sampling process at each sampled well is documented on groundwater sampling field forms.

Cross-Contamination Prevention Program

Dedicated bladder pumps and/or dedicated peristaltic tubing are used as possible, minimizing potential cross-contamination issues during the groundwater monitoring process. Remaining non-dedicated equipment (e.g., non-dedicated bladder pumps, electronic gauging probe, etc.) is properly decontaminated prior to use and between wells. The decontamination procedure may include a combination of chemical and mechanical decontamination. For example, scrubbing with ethyl alcohol (isopropanol) as warranted, followed by scrubbing using an Alconox-water solution, and distilled water rinse. The decontamination procedure for non-dedicated bladder pumps consists of cycling an Alconox-water solution through the pump's bladder. Distilled water is then cycled through the pump's bladder, followed by decontaminating the exterior body of the pump, using methods above.

HMI Deliverables

HMI provides accurate field documentation of all groundwater monitoring activities, with a brief narrative, a summary table (including gauging data, field parameters, well inspection data, and scheduled analytical scope), and a Groundwater Monitoring SOP Memo. Groundwater sampling forms, field instrument calibration log, and Chain-of-Custody forms are also provided.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-6A
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: MOB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1700	~~NA~~	12.21	0.0	19.05	14.05	Yes	Yes	Yes	Yes		Weather: 51. Cloudy 80's
4-26-17	1745	~~NA~~	12.23	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1750	12.54	0.5	7.90	21.2	5840	2.8	-100.1	7.2	clear	*Low-flow groundwater sample:*
|	1752	12.55	1.0	7.88	20.7	5800	1.5	-103.2	7.0	|	(A) peristaltic pump w/ ded tubing
|	1755	12.55	1.5	7.85	20.5	5770	1.5	-105.5	6.6	|	B) ded bladder pump
|	1757	12.55	2.0	7.82	20.5	~~57~~40	1.4	-107.6	6.3	|	C) non-ded bladder pump; or
|	1800	12.55	2.5	7.80	20.5	5700	1.4	-109.8	5.2	|	*Standard groundwater sample:*
|	1802	12.55	3.0	7.76	20.5	5~~7~~70	1.4	-111.5	5.1	|	D) bailer due to limited column; or
|	1805	12.55	3.5	7.75	20.3	5650	1.3	-112.8	4.8	|	E) recovery well cycling sample
↓	1807	12.55	4.0	7.69	20.2	5600	1.3	-114.3	4.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1810	MW-6A	12.55	7.69	20.2	5600	1.3	-114.3	4.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-6B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1705	NA	12.10	0.0	52.27	47.27	Yes	unable to	Issue	Yes		Weather: Clear 80's
4-26-17	1825	NA	12.14					close				

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1830	12.17	0.5	7.62	22.6	6180	2.2	-63.3	6.6	Clear	*Low-flow groundwater sample:*
	1832	12.17	1.0	7.61	21.5	6110	1.4	-61.8	6.5		(A) peristaltic pump w/ ded tubing
	1835	12.17	1.5	7.61	21.2	6030	1.2	-60.2	6.2		B) ded bladder pump
	1837	12.17	2.0	7.60	20.9	5928	1.0	-58.4	5.7		C) non-ded bladder pump; or
	1840	12.17	2.5	7.59	20.6	5850	0.9	-56.6	4.6		*Standard groundwater sample:*
	1842	12.17	3.0	7.58	20.5	5800	0.8	-54.6	4.2		D) bailer due to limited column; or
	1845	12.17	3.5	7.58	20.4	5780	0.8	-53.8	3.8		E) recovery well cycling sample
↓	1847	12.17	4.0	7.58	20.4	5770	0.7	-53.0	3.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1850	MW-6B	12.17	7.58	20.4	5770	0.7	-53.0	3.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-85
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1630	9.70	10.42	0.72	20.34	NA	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not	Sampled	due to	Presence			B) ded bladder pump
			2.0			of LNAPL ≥	0.03'				C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-85			Not	Sampled				DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-86
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MOB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1640	9.52	9.55	0.03	19.21	NA	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5			Not sampled due to presence					B) ded bladder pump
			2.0			of LNAPL ≥ 0.03'					C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-86			Not Sampled					DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45~~-u
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-120
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1655	NA	12.14	0.0	28.00	17.5	Yes	Yes	Yes	Yes		Weather: 51. Cloudy 80%
4-26-17	1700	NA	12.19	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1705	12.42	0.5	7.54	21.8	11120	1.3	-129.1	6.8	Clear	*Low-flow groundwater sample:*
	1707	12.43	1.0	7.50	20.7	11680	0.9	-131.6	6.3		(A) peristaltic pump w/ ded tubing
	1710	12.43	1.5	7.48	20.1	11820	0.6	-132.6	6.0		B) ded bladder pump
	1712	12.43	2.0	7.46	20.1	11900	0.6	-133.9	5.7		C) non-ded bladder pump; or
	1715	12.43	2.5	7.45	19.9	11970	0.5	-135.2	5.2		*Standard groundwater sample:*
	1717	12.43	3.0	7.43	19.8	11980	0.4	-136.0	4.8		D) bailer due to limited column; or
	1720	12.43	3.5	7.42	19.8	11960	0.4	-137.2	4.6		E) recovery well cycling sample
	1722	12.43	4.0	7.41	19.7	11940	0.4	-137.8	4.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1725	MW-120	12.43	7.41	19.7	11940	0.4	-137.8	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-121
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials MPB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1650	NA	12.71	0.0	27.32	17.5	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80's
4-26-17	1615	NA	12.72	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1620	12.83	0.5	8.00	21.0	7570	1.7	-12.1	24.3	Clear	*Low-flow groundwater sample:*
"	1622	12.87	1.0	7.94	20.1	7360	1.1	-18.4	21.6	"	(A) peristaltic pump w/ ded tubing
"	1625	12.90	1.5	7.86	19.9	7210	1.0	-23.7	20.1	"	B) ded bladder pump
"	1627	12.92	2.0	7.83	19.8	7160	1.0	-26.4	18.4	"	C) non-ded bladder pump; or
"	1630	12.94	2.5	7.78	19.8	7120	0.9	-28.2	16.3	"	*Standard groundwater sample:*
"	1632	12.96	3.0	7.73	19.7	7080	0.8	-29.4	12.1	"	D) bailer due to limited column; or
"	1635	12.98	3.5	7.70	19.7	7070	0.8	-30.5	10.6	"	E) recovery well cycling sample
↓	1637	13.00	4.0	7.67	19.6	7050	0.7	-31.1	9.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1640	MW-121	13.00	7.67	19.6	7050	0.7	-31.1	9.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-84
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1625	~~NA~~	9.22	0.0	20.56	15.2	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy, 88's
4-26-17	1350	NA	9.24	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1355	9.33	0.5	7.36	21.4	10510	1.5	-46.0	13.3	Clear w/ gold tint	*Low-flow groundwater sample:*
	1357	9.38	1.0	7.29	20.6	10600	1.2	-33.9	9.8		(A) peristaltic pump w/ ded tubing
	1400	9.42	1.5	~~7.27~~	20.3	10610	1.0	-30.8	8.7		B) ded bladder pump
	1402	9.46	2.0	7.25	20.1	10620	0.7	-27.6	8.4		C) non-ded bladder pump; or
	1405	9.50	2.5	7.22	20.0	10630	0.7	-24.8	8.1		*Standard groundwater sample:*
	1407	9.55	3.0	7.21	~~19.9~~	10630	0.7	-23.5	7.8		D) bailer due to limited column; or
	1410	9.59	3.5	7.20	19.9	10620	0.6	-22.4	7.6		E) recovery well cycling sample
↓	1412	9.62	4.0	7.19	19.8	~~10620~~	0.6	-21.0	7.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1415	MW-84	9.62	7.19	19.8	10620	0.6	-21.0	7.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-122
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MJB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1325	NA	10.38	0.0	23.31	18.4	Yes	Yes	Yes	Yes		Weather: Sl. cloudy 80's
4-26-17	1520	NA	10.42	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1525	11.04	0.5	7.60	19.7	12650	1.4	-93.0	26.7	Sl. Cloudy w/orange particles	Low-flow groundwater sample:
↓	1527	11.17	1.0	7.50	18.9	12140	1.0	-78.0	24.3	↓	(A) peristaltic pump w/ ded tubing
	1530	11.29	1.5	7.41	18.7	11888	0.8	-67.7	21.6	Clear w/orange particles	B) ded bladder pump
	1532	11.41	2.0	7.37	18.6	11810	0.6	-63.8	19.6	↓	C) non-ded bladder pump; or
	1535	11.52	2.5	7.34	18.4	11770	0.5	-61.2	17.8	Reduced purge	Standard groundwater sample:
	1540	11.55	3.0	7.30	18.3	11730	0.5	-58.2	17.1	rate to 0.1 L/m	D) bailer due to limited column; or
	1545	11.58	3.5	7.26	18.4	11700	0.5	-57.4	16.3	↓	E) recovery well cycling sample
↓	1550	11.61	4.0	7.22	18.4	11680	0.5	-57.1	15.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4-26-17	1555	MW-122	11.61	7.22	18.4	11680	0.5	-57.1	15.4			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-81
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: MOB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1520	NA	10.71	0.0	18.63	13.7	Yes	Yes	Yes	Yes		Weather: SI. Cloudy 80's
4-26-17	1305	NA	10.76	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1310	10.84	0.5	7.41	21.2	8320	4.1	-100.7	7.6	Clear	*Low-flow groundwater sample:*
"	1312	10.93	1.0	7.39	20.1	8180	3.4	-91.1	6.7	"	(A) peristaltic pump w/ ded tubing
"	1315	10.97	1.5	7.37	19.6	8110	2.9	-87.3	6.1	"	B) ded bladder pump
"	1317	11.02	2.0	7.36	19.4	8050	2.7	-84.7	5.6	"	C) non-ded bladder pump; or
"	1320	11.06	2.5	7.34	19.3	8020	2.7	-83.1	4.8	"	*Standard groundwater sample:*
"	1322	11.09	3.0	7.33	19.3	8010	2.6	-81.9	4.3	"	D) bailer due to limited column; or
"	1325	11.12	3.5	7.33	19.2	8000	2.5	-80.3	3.7	"	E) recovery well cycling sample
"	1327	11.16	4.0	7.32	19.2	7990	2.5	-79.9	3.3	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1330	MW-81	11.16	7.32	19.2	7990	2.5	-79.9	3.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-80
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: MDA

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1525	NA	8.90	0.0	14.69	14.7	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80's
4-26-17	1220	NA	8.94	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1225	9.03	0.5	7.29	18.5	9060	4.0	-157.8	10.6	Clear	*Low-flow groundwater sample:*
	1227	9.07	1.0	7.25	18.2	9180	3.1	-158.5	8.4		(A) peristaltic pump w/ ded tubing
	1230	9.10	1.5	7.22	18.0	9220	2.4	-159.1	7.6		B) ded bladder pump
	1232	9.11	2.0	7.19	17.8	9250	2.0	-159.3	7.0		C) non-ded bladder pump; or
	1235	9.12	2.5	7.16	17.8	9280	1.7	-159.6	4.4		*Standard groundwater sample:*
	1237	9.13	3.0	7.14	17.8	9270	1.6	-159.8	3.8		D) bailer due to limited column; or
	1240	9.14	3.5	7.12	17.7	9260	1.6	-160.1	3.6		E) recovery well cycling sample
	1242	9.15	4.0	7.12	17.7	9260	1.6	-161.1	3.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1245	MW-80	9.15	7.12	17.7	9260	1.6	-161.1	3.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+ EB-EP-04 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-79
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1530	NA	9.84	0.0	19.25	15.0	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80's
4-26-17	1130	NA	9.90	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1135	10.13	0.5	7.86	18.0	7050	3.3	-189.3	10.6	Clear	*Low-flow groundwater sample:*
	1137	10.19	1.0	7.76	17.8	7220	2.4	-190.2	8.6		(A) peristaltic pump w/ ded tubing
	1140	10.24	1.5	7.71	17.5	7250	1.8	-191.4	7.3		B) ded bladder pump
	1142	10.28	2.0	7.67	17.4	7260	1.4	-191.9	6.4		C) non-ded bladder pump; or
	1145	10.32	2.5	7.64	17.2	7260	1.2	-192.6	5.4		*Standard groundwater sample:*
	1147	10.35	3.0	7.60	17.2	7260	1.2	-192.5	4.8		D) bailer due to limited column; or
	1150	10.38	3.5	7.59	17.2	7260	1.2	-192.4	4.4		E) recovery well cycling sample
	1152	10.41	4.0	7.57	17.2	7260	1.1	-192.4	3.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1155	MW-79	10.41	7.57	17.2	7260	1.1	-192.4	3.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1210	EB-EP-04	NA							Same as above	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-82
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MMS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1540	NA	9.05	0.0	20.00	15.0	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1542	9.39	0.5	7.65	22.9	8530	1.9	-80.4	6.5	Clear w/ orange particles	*Low-flow groundwater sample:*
	1545	9.40	1.0	7.58	22.2	8390	1.6	-67.0	6.0	↓	(A) peristaltic pump w/ ded tubing
	1547	9.40	1.5	7.54	21.8	8290	1.2	-58.3	5.4		B) ded bladder pump
	1550	9.40	2.0	7.51	21.6	8230	0.9	-49.1	4.9		C) non-ded bladder pump; or
	1552	9.40	2.5	7.47	21.6	8150	0.7	-45.3	5.2		*Standard groundwater sample:*
	1555	9.40	3.0	7.45	21.5	8110	0.7	-46.1	5.4		D) bailer due to limited column; or
	1557	9.40	3.5	7.42	21.5	8080	0.7	-46.9	5.8		E) recovery well cycling sample
↓	1600	9.40	4.0	7.41	21.5	8090	0.7	-47.2	6.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1605	MW-82	9.40	7.41	21.5	8090	0.7	-47.2	6.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ EB-EP-01 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-74
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MJB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1425	NA	8.81	0.0	20.19	14.8	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1430	8.90	0.5	7.54	24.1	12000	1.8	80.0	12.6	Clear	*Low-flow groundwater sample:*
	1432	8.94	1.0	7.44	22.8	11950	1.3	79.2	10.4		(A) peristaltic pump w/ ded tubing
	1435	8.95	1.5	7.39	22.3	11900	1.1	78.6	8.5		B) ded bladder pump
	1437	8.96	2.0	7.34	22.0	11860	0.9	78.0	6.4		C) non-ded bladder pump; or
	1440	8.96	2.5	7.29	21.9	11840	0.9	77.3	5.8		*Standard groundwater sample:*
	1442	8.96	3.0	7.26	21.7	11820	0.8	76.5	5.4		D) bailer due to limited column; or
	1445	8.96	3.5	7.24	21.6	11820	0.8	76.1	4.8		E) recovery well cycling sample
	1447	8.96	4.0	7.23	21.6	11810	0.7	75.7	4.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1450	MW-74	8.96	7.23	21.6	11810	0.7	75.7	4.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1505	EB-EP-01	NA	→	→	→	→	→	→	same as above	same	same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ Trip Blank - EP-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-73
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1340	NA	8.75	0.0	19.60	14.6	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1345	8.80	0.5	7.82	23.7	12070	2.8	49.4	80.1	Sl. Cloudy	*Low-flow groundwater sample:*
	1347	8.81	1.0	7.74	22.3	12020	2.2	55.0	76.4		(A) peristaltic pump w/ ded tubing
	1350	8.82	1.5	7.68	21.3	11980	1.4	58.1	56.7		B) ded bladder pump
	1352	8.82	2.0	7.61	20.9	11930	1.2	59.6	41.2		C) non-ded bladder pump; or
	1355	8.82	2.5	7.58	20.8	11910	1.1	59.5	38.6		*Standard groundwater sample:*
	1357	8.82	3.0	7.56	20.7	11910	1.1	58.4	34.5		D) bailer due to limited column; or
	1400	8.82	3.5	7.53	20.5	11890	1.1	53.0	30.2		E) recovery well cycling sample
	1402	8.82	4.0	7.51	20.4	11910	1.1	49.9	28.6	√	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1405	MW-73	8.82	7.51	20.4	11910	1.1	49.9	28.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-2A
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: mgm

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1315	NA	10.72	0.0	1781	15.0	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy, 80
4-26-17	1435	NA	10.73	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1440	10.98	0.5	7.29	21.2	12,780	1.9	-83.0	5.6	Clear	*Low-flow groundwater sample:*
↓	1442	11.04	1.0	7.22	20.2	13,100	1.5	-82.8	5.3	↓	(A) peristaltic pump w/ ded tubing
	1445	11.10	1.5	7.17	19.6	13300	1.1	-84.2	5.1		B) ded bladder pump
	1447	11.14	2.0	7.14	19.3	13560	1.0	-85.8	4.8		C) non-ded bladder pump; or
	1450	11.19	2.5	7.11	19.2	13610	0.8	-86.7	4.4		*Standard groundwater sample:*
	1452	11.23	3.0	7.09	19.1	13640	0.8	-87.0	3.7		D) bailer due to limited column; or
	1455	11.26	3.5	7.07	19.0	13660	0.7	-86.9	2.8		E) recovery well cycling sample
↓	1457	11.29	4.0	7.05	19.0	13680	0.7	-86.5	3.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1500	MW-2A	11.29	7.05	19.0	13680	0.7	-86.5	3.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

(Not in "Sampling" Program)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-2B (gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1325	NA	10.60	0.0	52.00	No Sample	Y	Y	Y	Y		Weather: SL. Cloudy, 20's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-72
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1230	NA	7.06	0.0	13.92	11.9	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy/ 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1235	7.34	0.5	7.34	24.5	12700	1.0	25.7	16.0	Clear	*Low-flow groundwater sample:*
	1237	7.45	1.0	7.24	23.5	13190	0.8	35.5	13.6		(A) peristaltic pump w/ ded tubing
	1240	7.45	1.5	7.18	23.2	13280	0.8	39.4	10.8		B) ded bladder pump
	1242	7.45	2.0	7.12	23.1	13380	0.8	42.5	9.8		C) non-ded bladder pump; or
	1245	7.45	2.5	7.07	22.9	13400	0.8	41.6	9.1		*Standard groundwater sample:*
	1247	7.45	3.0	7.04	23.3	13370	0.8	38.0	9.4		D) bailer due to limited column; or
	1250	7.45	3.5	7.02	23.0	13350	0.7	35.2	10.6		E) recovery well cycling sample
	1252	7.45	4.0	7.00	22.9	13340	0.7	33.0	9.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1255	MW-72	7.45	7.00	22.9	13340	0.7	33.0	9.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-6
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	940	NA	10.95	0.0	26.91	21.6	YES	lid cannot close properly	YES	YES	cracked pad	Weather: Sl. Cloudy 70's

Well Purging Record

* confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm) *	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	945	11.21	0.5	6.39	23.4	15620	1.4	26.6	42.1	Sl. Cloudy	*Low-flow groundwater sample:*
	947	11.21	1.0	6.54	22.7	15710	1.0	36.8	38.9		(A) peristaltic pump w/ ded tubing
	950	11.21	1.5	6.67	22.1	15750	0.8	47.4	33.3		B) ded bladder pump
	952	11.21	2.0	6.74	21.9	15730	0.7	48.8	26.7		C) non-ded bladder pump; or
	955	11.21	2.5	6.79	21.7	15710	0.7	45.0	22.4	Clear	*Standard groundwater sample:*
	957	11.21	3.0	6.82	21.5	15710	0.6	38.1	15.6		D) bailer due to limited column; or
	1000	11.21	3.5	6.85	21.6	15720	0.6	34.7	11.4		E) recovery well cycling sample
	1002	11.21	4.0	6.87	21.6	15700	0.6	31.1	7.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1005	OCD-6	11.21	6.87	21.6	15700	0.6	31.1	7.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 7AR
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MMB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1030	NA	9.72	0.0	21.29	16.0	Yes	Yes	Yes	Yes		Weather: Sl. cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1035	9.91	0.5	7.16	26.1	13100	1.1	-42.6	24.7	Clear w/ orange particles	*Low-flow groundwater sample:*
	1037	9.96	1.0	7.12	24.6	12940	0.9	-22.4	18.6		(A) peristaltic pump w/ ded tubing
	1040	10.00	1.5	7.10	23.0	12800	0.8	-7.3	16.4		B) ded bladder pump
	1042	10.04	2.0	7.08	22.5	12690	0.7	-1.0	14.7		C) non-ded bladder pump; or
	1045	10.06	2.5	7.08	22.1	12680	0.7	+2.5	12.6		*Standard groundwater sample:*
	1047	10.10	3.0	7.06	22.0	12610	0.7	+6.2	10.6		D) bailer due to limited column; or
	1050	10.12	3.5	7.06	21.8	12610	0.7	+7.3	8.4		E) recovery well cycling sample
	1052	10.15	4.0	7.05	21.7	12610	0.7	+10.4	7.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1055	OCD-7AR	10.15	7.05	21.7	12610	0.7	10.4	7.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 7B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MPB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1115	NA	9.57	0.0	56.85	51.9	Y	Y	Y	Y		Weather: Sl. Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1120	10.45	0.5	7.71	23.1	6510	1.3	-155.0	24.3	clear	*Low-flow groundwater sample:*
	1122	11.03	1.0	7.65	22.4	6266	1.0	-156.4	17.6		(A) peristaltic pump w/ ded tubing
	1125	11.45	1.5	7.59	22.1	6080	0.8	-148.1	14.6		B) ded bladder pump
	1127	11.76	2.0	7.53	21.9	5950	0.6	-147.7	10.6		C) non-ded bladder pump; or
	1130	12.04	2.5	7.51	22.0	5910	0.5	-147.8	8.6	Reduced purge	*Standard groundwater sample:*
	1135	12.24	3.0	7.49	22.6	5890	0.5	-148.2	6.4	rate to 0.1 L/m	D) bailer due to limited column; or
	1140	12.36	3.5	7.47	22.0	5880	0.5	-148.7	5.3		E) recovery well cycling sample
	1145	12.52	4.0	7.45	22.0	5870	0.5	-148.9	4.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1150	OCD-7B	12.52	7.45	22.0	5870	0.5	-148.9	4.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-7C (gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1220	NA	8.99	0.0	71.95	No Sample	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Tool Company locks gate by 5:00 PM

Monitoring Well Purging and Sampling Record

(Bagged tube + device to aid tubing guidance)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#15C
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	910	N/A	14.74	0.0	22.30	20.0	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy 70's
4-25-17	935	N/A	14.83	0.0								

Well Purging Record

Recovery well (trench-related); below-grade vault

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	940	NM *	0.5	7.05	20.8	2930	5.0	-321.6	14.6	Clear	*Low-flow groundwater sample:*
	942	NM	1.0	6.88	20.6	2870	4.4	-330.8	10.6		(A) peristaltic pump w/ ded tubing
	945	NM	1.5	6.82	20.5	2810	3.7	-337.5	8.3		B) ded bladder pump
	947	NM	2.0	6.80	20.5	2780	3.3	-338.9	7.6		C) non-ded bladder pump; or
	950	NM	2.5	6.79	20.5	2740	2.8	-339.0	7.1		*Standard groundwater sample:*
	952	NM	3.0	6.79	20.5	2730	2.8	-337.2	6.8		D) bailer due to limited column; or
	955	NM	3.5	6.78	20.5	2720	2.7	-337.5	6.4		E) recovery well cycling sample
↓	957	NM	4.0	6.77	20.5	2720	2.7	-337.9	6.1	↓	F) irrigation well grab sample

Well Sampling Record

* Not enough room for both tube and gauging probe

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1000	RW-#15C	NM	6.77	20.5	2720	2.7	-337.9	6.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Tool company locks gate by 5:00 PM]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-48
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	915	NA	17.03	0.0	32.00	26.9	Yes	Yes	*Issue	Yes		Weather: Sl. Cloudy 70's
4-26-17	850	NA	17.23	0.0								

Well Purging Record

* needs new pad /at grade canister & plate installation

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	855	17.50	0.5	6.58	20.4	4510	2.1	-338.6	17.6	Clear; colorless; odor	*Low-flow groundwater sample:*
	857	17.54	1.0	6.68	20.6	4430	1.8	-351.7	14.3		(A) peristaltic pump w/ ded tubing
	900	17.58	1.5	6.72	21.0	4350	1.6	-361.7	12.7		B) ded bladder pump
	902	17.60	2.0	6.74	21.1	4330	1.5	-365.5	10.6		C) non-ded bladder pump; or
	905	17.60	2.5	6.76	21.0	4320	1.4	-369.9	9.7		*Standard groundwater sample:*
	907	17.60	3.0	6.76	21.0	4310	1.4	-371.5	9.1		D) bailer due to limited column; or
	910	17.60	3.5	6.77	21.1	4300	1.4	-373.5	8.9		E) recovery well cycling sample
	912	17.60	4.0	6.78	21.0	4300	1.4	-375.1	8.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	915	MW-48	17.60	6.78	21.0	4300	1.4	-375.1	8.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	HNO3	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-130
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	920	NA	18.89	0.0	45.00	37.4	YES	YES	YES	Yes		Weather: Sl. Cloudy 70's
4-26-17	1025	NA	19.11	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1030	19.19	0.5	7.12	21.4	3100	2.0	-228.8	21.4	clear; colorless	*Low-flow groundwater sample:*
	1032	19.19	1.0	7.00	21.5	3150	1.8	-233.1	16.8		(A) peristaltic pump w/ ded tubing
	1035	19.19	1.5	6.93	21.6	3180	1.7	-236.1	13.6		B) ded bladder pump
	1037	19.19	2.0	6.87	21.6	3200	1.7	-238.9	10.4		C) non-ded bladder pump; or
	1040	19.19	2.5	6.84	21.5	3200	1.6	-239.9	9.6		*Standard groundwater sample:*
	1042	19.19	3.0	6.83	21.6	3200	1.5	-240.0	8.7		D) bailer due to limited column; or
	1045	19.19	3.5	6.82	21.6	3200	1.5	-240.7	8.3		E) recovery well cycling sample
↓	1047	19.19	4.0	6.80	21.6	3200	1.5	-241.0	6.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1050	MW-130	19.19	6.80	21.6	3200	1.5	-241.0	6.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	HNO3	Field filtered 0.45-u
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-4
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials: MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	905	22.96	23.05	0.09	41.75	31.7	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not Sampled		due	to Presence			B) ded bladder pump
			2.0		of LNAPL		>0.03'				C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
		KWB-4			Not Sampled							Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Equipped as RW in above-grade vault]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-19
Event: Spring 2017 (Biennial)
Area of Concern: Rest
(Gauge to top of 1-in galvanized pipe)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	900	23.16	23.19	0.03	NM	10' off base as needed	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		LNAPL ≥ 0.03'			No Sample			B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-19								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-76
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1545	NA	10.68	0.0	20.33	16.0	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1615	NA	10.74	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1620	10.79	0.5	7.21	21.6	7550	3.2	-88.1	10.1	Clear	*Low-flow groundwater sample:*
	1622	10.79	1.0	7.12	21.0	7540	2.5	-88.2	9.6		(A) peristaltic pump w/ ded tubing
	1625	10.79	1.5	7.05	20.1	7520	2.0	-88.1	8.5		B) ded bladder pump
	1627	10.79	2.0	6.99	20.0	7510	1.9	-88.3	7.9		C) non-ded bladder pump; or
	1630	10.79	2.5	6.96	19.9	7490	1.7	-88.8	7.4		*Standard groundwater sample:*
	1632	10.79	3.0	6.94	19.9	7480	1.5	-89.2	6.8		D) bailer due to limited column; or
	1635	10.79	3.5	6.93	19.8	7480	1.5	-89.5	6.3		E) recovery well cycling sample
↓	1637	10.79	4.0	6.92	19.8	7470	1.4	-89.7	5.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1640	MW-76	10.79	6.92	19.8	7470	1.4	-89.7	5.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-77
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1550	NA	8.92	0.0	20.52	15.2	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1700	NA	8.98	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1705	9.12	0.5	7.32	20.6	8530	4.1	-82.7	9.8	clear; gold tint; odor	*Low-flow groundwater sample:*
	1707	9.14	1.0	7.20	20.0	8560	3.3	-81.0	8.7		(A) peristaltic pump w/ ded tubing
	1710	9.16	1.5	7.09	19.8	8590	3.0	-81.6	8.1		B) ded bladder pump
	1712	9.17	2.0	7.01	19.2	8610	2.8	-82.0	7.9		C) non-ded bladder pump; or
	1715	9.18	2.5	6.95	19.1	8630	2.7	-82.9	7.5		*Standard groundwater sample:*
	1717	9.18	3.0	6.93	19.1	8650	2.7	-83.3	6.9		D) bailer due to limited column; or
	1720	9.18	3.5	6.91	19.2	8660	2.6	-83.6	6.3		E) recovery well cycling sample
↓	1722	9.18	4.0	6.89	19.2	8670	2.6	-83.9	6.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1725	MW-77	9.18	6.89	19.2	8670	2.6	-83.9	6.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-78
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1555	NA	8.92	0.0	19.57	14.6	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1740	NA	9.00	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1745	9.08	0.5	7.29	21.0	5180	3.9	-2.0	7.8	clear w/ gold tint	*Low-flow groundwater sample:*
	1747	9.15	1.0	7.21	19.7	4900	2.9	+31.3	6.9		(A) peristaltic pump w/ ded tubing
	1750	9.20	1.5	7.15	19.5	4870	2.5	+36.8	6.1		B) ded bladder pump
	1752	9.25	2.0	7.07	19.2	4850	2.3	+48.5	5.8		C) non-ded bladder pump; or
	1755	9.29	2.5	7.03	19.2	4840	2.2	+51.5	5.3		*Standard groundwater sample:*
	1757	9.33	3.0	7.00	19.1	4830	2.1	+52.8	4.3		D) bailer due to limited column; or
	1800	9.37	3.5	7.00	19.1	4830	2.1	+53.3	3.9		E) recovery well cycling sample
↓	1802	9.41	4.0	6.99	19.0	4830	2.0	+54.2	3.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1805	MW-78	9.41	6.99	19.0	4830	2.0	+54.2	3.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-75
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCO

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1600	NA	9.08	0.0	23.74	18.4	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1825	NA	9.14	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1830	9.17	0.5	7.35	20.7	8140	2.6	-98.4	9.7	Clear; gold tint;	*Low-flow groundwater sample:*
	1832	9.17	1.0	7.28	20.2	8190	2.0	-98.9	8.6	odor	(A) peristaltic pump w/ ded tubing
	1835	9.18	1.5	7.21	19.7	8230	1.7	-99.5	8.3	↓	B) ded bladder pump
	1837	9.18	2.0	7.15	19.6	8260	1.5	-101.3	7.5	↓	C) non-ded bladder pump; or
	1840	9.18	2.5	7.13	19.6	8280	1.3	-103.5	7.1	↓	*Standard groundwater sample:*
	1842	9.18	3.0	7.11	19.5	8290	1.2	-105.6	6.5	↓	D) bailer due to limited column; or
	1845	9.18	3.5	7.09	19.5	8300	1.1	-106.2	6.3	↓	E) recovery well cycling sample
↓	1847	9.18	4.0	7.08	19.6	8310	1.1	-106.5	6.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1850	MW-75	9.18	7.08	19.6	8310	1.1	-106.5	6.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Meat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-83
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1605	NA	8.91	0.0	19.91	15.6	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1530	NA	8.95	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1535	9.05	0.5	7.28	22.7	5840	2.5	-116.6	15.8	Clear w/ gold tint	*Low-flow groundwater sample:*
	1537	9.10	1.0	7.20	21.0	5960	1.9	-120.9	12.5		(A) peristaltic pump w/ ded tubing
	1540	9.12	1.5	7.13	20.2	6040	1.6	-121.9	10.9		B) ded bladder pump
	1542	9.14	2.0	7.09	19.9	6060	1.4	-122.0	9.7		C) non-ded bladder pump; or
	1545	9.15	2.5	7.04	19.8	6070	1.3	-122.2	9.2		*Standard groundwater sample:*
	1547	9.16	3.0	7.02	19.8	6080	1.3	-122.5	8.6		D) bailer due to limited column; or
	1550	9.16	3.5	7.01	19.9	6080	1.2	-122.8	8.3		E) recovery well cycling sample
↓	1552	9.16	4.0	7.01	19.9	6080	1.2	-123.1	7.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1555	MW-83	9.16	7.01	19.9	6080	1.2	-123.1	7.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+ Dup-EP-03 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-3
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1610	NA	9.06	0.0	20.18	16.1	Yes	Yes	Issue	Yes		Weather: Clear 60's
4/26/17	1430	NA	9.12	0.0								

Well Purging Record

No protective casing; stainless steel well casing with locked expandable cap; probed for pad but not found

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1435	9.17	0.5	7.35	20.4	7570	2.8	-16.6	15.5	Clear	*Low-flow groundwater sample:*
	1437	9.19	1.0	7.29	19.8	7510	2.2	-16.5	10.7		(A) peristaltic pump w/ ded tubing
	1440	9.20	1.5	7.23	19.2	7510	1.9	-16.1	9.8		B) ded bladder pump
	1442	9.20	2.0	7.18	19.1	7480	1.5	-15.9	8.7		C) non-ded bladder pump; or
	1445	9.20	2.5	7.15	18.9	7470	1.3	-15.7	8.1		*Standard groundwater sample:*
	1447	9.20	3.0	7.13	18.8	7476	1.2	-15.4	7.3		D) bailer due to limited column; or
	1450	9.20	3.5	7.12	18.8	7480	1.2	-15.1	7.0		E) recovery well cycling sample
↓	1452	9.20	4.0	7.11	18.9	7480	1.1	-14.9	6.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1455	MW-3	9.20	7.11	18.9	7480	1.1	-14.9	6.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1000	Dup-EB-03	9.20	7.11	18.9	7480	1.1	-14.9	6.8	Same analysis	Same	same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-88
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1500	NA	8.45	0.0	20.31	14.8	Yes	Yes	Yes	Yes	Hole in pad	Weather: Clear 50's
4/26/17	1030	NA	8.51	0.0								

Well Purging Record

* Issue with pad; hole in west side of well pad well remains functional

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1035	8.58	0.5	7.19	18.6	7990	2.7	-109.8	20.2	clear w/ orange particles	*Low-flow groundwater sample:*
"	1037	8.59	1.0	7.10	18.3	8040	2.2	-100.3	15.1		(A) peristaltic pump w/ ded tubing
"	1040	8.60	1.5	7.05	17.9	8080	1.8	-92.4	12.5		B) ded bladder pump
"	1042	8.60	2.0	7.03	17.7	8080	1.5	-81.8	10.8		C) non-ded bladder pump; or
"	1045	8.60	2.5	7.02	17.7	8070	1.3	-78.6	9.7		*Standard groundwater sample:*
"	1047	8.61	3.0	7.01	17.6	8080	1.3	-74.7	9.3		D) bailer due to limited column; or
"	1050	8.61	3.5	7.01	17.6	8070	1.2	-72.3	8.9		E) recovery well cycling sample
↓	1052	8.61	4.0	7.01	17.6	8070	1.2	-70.4	8.4	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1055	MW-88	8.61	7.01	17.6	8070	1.2	-70.4	8.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ DUP-EP-02 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-22A
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1510	NA	7.75	0.0	22.65	17.4	Yes	Yes	Yes	Yes		Weather: Clear 60s
4/26/17	1115	NA	7.81	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1120	7.88	0.5	7.20	18.9	8910	2.5	-10.3	32.1	Clear w/ orange	*Low-flow groundwater sample:*
↓	1122	7.94	1.0	7.13	18.9	8950	2.1	-16.5	30.8	particles	(A) peristaltic pump w/ ded tubing
	1125	7.97	1.5	7.06	18.6	8990	1.8	-21.3	26.5	↓	B) ded bladder pump
	1127	8.00	2.0	7.05	18.1	9000	1.6	-25.3	25.1		C) non-ded bladder pump; or
	1130	8.03	2.5	7.03	18.1	8990	1.4	-27.5	24.2		*Standard groundwater sample:*
	1132	8.05	3.0	7.02	18.0	9000	1.3	-30.7	23.7		D) bailer due to limited column; or
	1135	8.06	3.5	7.01	18.0	9010	1.2	-33.5	23.6		E) recovery well cycling sample
↓	1137	8.07	4.0	7.01	18.0	9010	1.2	-35.6	23.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1140	MW-22A	8.07	7.01	18.0	9010	1.2	-35.6	23.7	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				~~Neat~~	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	900	DUP-EP-02	8.07	7.01	18.0	9010	1.2	-35.6	23.7	Same analysis	same	same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-22B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1515	NA	7.60	0.0	54.66	49.7	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1210	NA	7.74	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1215	7.81	0.5	7.20	19.8	7650	2.0	-82.6	9.8	Clear	*Low-flow groundwater sample:*
	1217	7.81	1.0	7.15	19.4	7500	1.7	-70.9	8.6		(A) peristaltic pump w/ ded tubing
	1220	7.81	1.5	7.12	19.0	7420	1.5	-61.8	8.1		B) ded bladder pump
	1222	7.81	2.0	7.10	18.9	7400	1.4	-57.8	7.8		C) non-ded bladder pump; or
	1225	7.81	2.5	7.08	18.9	7390	1.3	-53.5	7.4		*Standard groundwater sample:*
	1227	7.81	3.0	7.06	18.8	7380	1.3	-50.2	6.9		D) bailer due to limited column; or
	1230	7.81	3.5	7.05	18.8	7380	1.2	-49.3	6.5		E) recovery well cycling sample
↓	1232	7.81	4.0	7.04	18.7	7370	1.2	-47.9	5.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1235	MW-22B	7.81	7.04	18.7	7370	1.2	-47.9	5.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

located approx. 15 yards off off the left side of the path ("After the "s" turn)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-10
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1525	NA	5.20	0.0	18.45	13.3	Yes	Yes	Yes	Yes	cracked pad	Weather: Clear 60's
4/26/17	1255	NA	5.26	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1300	5.27	0.5	6.65	19.4	7280	2.3	-76.2	7.8	clear w/ small	*Low-flow groundwater sample:*
	1302	5.27	1.0	6.70	19.3	7250	1.8	-63.7	6.9	orange particles	(A) peristaltic pump w/ ded tubing
	1305	5.28	1.5	6.73	19.2	7210	1.5	-56.5	6.3		B) ded bladder pump
	1307	5.28	2.0	6.76	19.1	7200	1.3	-43.2	5.8		C) non-ded bladder pump; or
	1310	5.28	2.5	6.78	19.0	7200	1.2	-30.8	5.3		*Standard groundwater sample:*
	1312	5.28	3.0	6.79	19.0	7196	1.2	-26.5	4.9		D) bailer due to limited column; or
	1315	5.28	3.5	6.80	19.0	7190	1.1	-23.1	4.7		E) recovery well cycling sample
↓	1317	5.28	4.0	6.80	19.1	7190	1.1	-20.8	4.3	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1320	MW-10	5.28	6.80	19.1	7190	1.1	-20.8	4.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-123
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCO

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1535	NA	5.59	0.0	25.71	25.0	Yes	Yes	Yes	Yes		Weather: Clear 60's
4/26/17	1340	NA	5.64	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1345	5.65	0.5	7.23	19.0	8040	2.5	-75.4	27.8	clear w/ white particles	*Low-flow groundwater sample:*
|	1347	5.66	1.0	7.15	19.6	8060	2.0	-72.6	14.5	|	(A) peristaltic pump w/ ded tubing
|	1350	5.66	1.5	7.11	19.5	8090	1.7	-61.2	10.9	|	B) ded bladder pump
|	1352	5.66	2.0	7.07	19.3	8120	1.5	-41.3	9.7	|	C) non-ded bladder pump; or
|	1355	5.66	2.5	7.03	19.1	8150	1.4	-32.3	9.5	|	*Standard groundwater sample:*
|	1357	5.66	3.0	7.01	19.2	8150	1.4	-25.6	8.7	|	D) bailer due to limited column; or
|	1400	5.66	3.5	7.00	19.2	8160	1.3	-21.3	8.3	|	E) recovery well cycling sample
↓	1402	5.66	4.0	6.99	19.2	8160	1.3	-18.6	7.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1405	MW-123	5.66	6.99	19.2	8160	1.3	-18.6	7.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

2 1/2 ft of subsidence under pad; Top of protective casing extends above protective casing; lock on expandable cap

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-4A
Event: Spring 2017 (Biennial)
Area of Concern: EP [blockage @ 11.88']

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1445	NA	11.59	0.0	>11.88	11.5 *	Yes	Issue	Issue	Yes		Weather: Clear 50's
4/26/17	900	NA	11.68	0.0								

Well Purging Record

* Lowered intake as needed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	905	11.70	0.5	7.43	18.0	7020	3.3	-161.8	15.3	Clear w/ black particles	Low-flow groundwater sample:
	907	11.70	1.0	7.32	17.6	7020	2.9	-166.9	10.5		(A) peristaltic pump w/ ded tubing
	910	11.70	1.5	7.25	17.6	7030	2.7	-170.1	9.5		B) ded bladder pump
	912	11.70	2.0	7.21	17.5	7040	2.6	-174.2	8.7		C) non-ded bladder pump; or
	915	11.70	2.5	7.19	17.5	7040	2.5	-176.2	8.3		Standard groundwater sample:
	917	11.70	3.0	7.16	17.5	7050	2.5	-177.5	7.9		D) bailer due to limited column; or
	920	11.70	3.5	7.15	17.5	7050	2.4	-178.2	7.4		E) recovery well cycling sample
	922	11.70	4.0	7.15	17.5	7050	2.4	-178.9	7.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	925	MW-4A	11.70	7.15	17.5	7050	2.4	-178.9	7.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW - 4B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1450	NA	10.85	0.0	72.37	67.4	Yes	Yes	Yes	Yes		Weather: Clear 50's
4/26/17	945	NA	10.94	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	950	11.05	0.5	7.45	18.9	5630	3.8	-129.9	12.3	Clear	*Low-flow groundwater sample:*
	952	11.05	1.0	7.34	18.9	5520	3.4	-129.4	9.8		(A) peristaltic pump w/ ded tubing
	955	11.05	1.5	7.29	18.9	5480	3.2	-129.0	7.5		B) ded bladder pump
	957	11.05	2.0	7.22	18.8	5470	3.1	-128.5	6.1		C) non-ded bladder pump; or
	1000	11.05	2.5	7.15	18.8	5470	3.1	-127.3	5.3		*Standard groundwater sample:*
	1002	11.05	3.0	7.12	18.8	5470	3.0	-126.3	5.1		D) bailer due to limited column; or
	1005	11.05	3.5	7.10	18.8	5460	3.0	-125.9	4.9		E) recovery well cycling sample
↓	1007	11.05	4.0	7.09	18.8	5460	3.0	-125.4	4.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1010	MW-4B	11.05	7.09	18.8	5460	3.0	-125.4	4.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+ EB-EP-03 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5A
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1210	NA	8.18	0.0	20.15	14.8	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1215	8.24	0.5	7.52	23.9	14,520	2.9	-134.1	18.3	Clear w/ orange	*Low-flow groundwater sample:*
↓	1217	8.24	1.0	7.45	22.7	14,610	2.2	-136.0	13.7	particles	(A) peristaltic pump w/ ded tubing
	1220	8.24	1.5	7.40	21.5	14,780	1.7	-138.2	10.5	↓	B) ded bladder pump
	1222	8.24	2.0	7.36	21.2	15,110	1.5	-140.4	9.7		C) non-ded bladder pump; or
	1225	8.24	2.5	7.32	21.1	15,250	1.3	-141.2	8.6		*Standard groundwater sample:*
	1227	8.24	3.0	7.28	21.1	15,420	1.2	-141.5	8.3		D) bailer due to limited column; or
	1230	8.24	3.5	7.26	21.1	15,490	1.2	-141.8	7.9		E) recovery well cycling sample
↓	1232	8.24	4.0	7.24	21.1	15,520	1.1	-142.1	7.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1235	MW-5A	8.24	7.24	21.1	15,520	1.1	-142.1	7.5	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1250	EB-EP-03	NA	→	→	→	→	→	→	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1305	NA	8.34	0.0	53.54	48.5	yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1310	8.35	0.5	7.23	23.9	9090	2.3	-112.5	6.5	Clear	*Low-flow groundwater sample:*
"	1312	8.35	1.0	7.19	23.5	9030	1.9	-107.3	4.2	"	(A) peristaltic pump w/ ded tubing
"	1315	8.35	1.5	7.15	22.8	9010	1.5	-104.2	3.8	"	B) ded bladder pump
"	1317	8.35	2.0	7.13	21.9	9000	1.2	-102.3	3.4	"	C) non-ded bladder pump; or
"	1320	8.35	2.5	7.10	21.1	8990	1.0	-100.6	2.9	"	*Standard groundwater sample:*
"	1322	8.35	3.0	7.05	21.1	8980	0.9	-99.8	2.7	"	D) bailer due to limited column; or
"	1325	8.35	3.5	7.02	21.2	8980	0.9	-97.5	2.5	"	E) recovery well cycling sample
↓	1327	8.35	4.0	7.00	21.2	8970	0.9	-96.1	2.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1330	MW-5B	8.35	7.00	21.2	8970	0.9	-96.1	2.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5C
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1350	NA	8.54	0.0	71.64	66.6	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1355	8.56	0.5	7.45	23.8	4760	1.9	-102.5	22.6	Clear w/ white particles	Low-flow groundwater sample:
	1357	8.56	1.0	7.39	23.2	4650	1.6	-101.7	25.8		(A) peristaltic pump w/ ded tubing
	1400	8.56	1.5	7.33	22.4	4580	1.4	-97.4	26.7		B) ded bladder pump
	1402	8.56	2.0	7.28	22.2	4560	1.3	-97.2	28.3		C) non-ded bladder pump; or
	1405	8.56	2.5	7.24	22.1	4540	1.2	-96.7	32.2		Standard groundwater sample:
	1407	8.56	3.0	7.22	21.9	4510	1.2	-94.3	33.9		D) bailer due to limited column; or
	1410	8.56	3.5	7.21	21.9	4490	1.1	-94.1	34.1		E) recovery well cycling sample
↓	1412	8.56	4.0	7.21	21.8	4480	1.1	-93.8	34.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/25/17	1415	MW-5C	8.56	7.21	21.8	4480	1.1	-93.8	34.5			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

2-in stainless steel well casing extends approximately 1-foot above to top of the steel protective casing; expandable locking cap is locked

Monitoring Well Purging and Sampling Record

+ DUP-EP-01 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-7A
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1030	NA	7.57	0.0	17.25	12.1	Yes	Yes	Issue	Yes		Weather: Partly Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1035	7.67	0.5	7.53	21.9	10,910	2.2	-82.2	>200	cloudy; orange particles	*Low-flow groundwater sample:*
	1037	7.67	1.0	7.45	20.7	10,640	1.7	-76.2	>200	↓	(A) peristaltic pump w/ ded tubing
	1040	7.68	1.5	7.39	19.8	10,570	1.4	-75.3	165	↓	B) ded bladder pump
	1042	7.68	2.0	7.35	19.5	10,480	1.2	-77.9	52.3	sl. cloudy	C) non-ded bladder pump; or
	1045	7.69	2.5	7.29	19.3	10,470	1.1	-79.1	24.0	clear	*Standard groundwater sample:*
	1047	7.68	3.0	7.25	19.2	10,400	1.1	-79.9	11.2	↓	D) bailer due to limited column; or
	1050	7.68	3.5	7.23	19.2	10,400	1.0	-80.9	10.5	↓	E) recovery well cycling sample
↓	1052	7.68	4.0	7.21	19.2	10,390	1.0	-81.3	9.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/25/17	1055	MW-7A	7.68	7.21	19.2	10,390	1.0	-81.3	9.8	DRO	HCL	Lab: ESC Lab Sciences, Mt. Juliet, TN 8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1000	DUP-EP-01	7.68	7.21	19.2	10,390	1.0	-81.3	9.8	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-7B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1125	NA	8.87	0.0	52.56	47.6	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1130	8.99	0.5	7.49	23.7	6310	1.9	-18.7	6.8	Clear	*Low-flow groundwater sample:*
	1132	8.99	1.0	7.32	22.7	6100	1.4	-19.7	6.2		(A) peristaltic pump w/ ded tubing
	1135	8.99	1.5	7.25	21.7	5970	1.2	-15.8	5.7		B) ded bladder pump
	1137	8.99	2.0	7.19	21.4	5910	1.1	-13.5	5.1		C) non-ded bladder pump; or
	1140	8.99	2.5	7.14	21.3	5870	1.1	-10.3	4.8		*Standard groundwater sample:*
	1142	8.99	3.0	7.11	21.2	5840	1.0	-10.1	4.2		D) bailer due to limited column; or
	1145	8.99	3.5	7.09	21.2	5820	1.0	-9.8	3.9		E) recovery well cycling sample
↓	1147	8.99	4.0	7.08	21.1	5810	0.9	-9.3	3.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1150	MW-7B	8.99	7.08	21.1	5810	0.9	-9.3	3.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+ Trip Blank - EP-02

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-8A
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	945	NA	8.61	0.0	20.74	16.4	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	950	9.06	0.5	7.20	23.4	13,220	2.8	-146.1	9.8	Clear w/ orange	*Low-flow groundwater sample:*
↓	952	9.21	1.0	7.18	22.1	13,320	2.3	-142.4	9.2	particles	(A) peristaltic pump w/ ded tubing
	955	9.28	1.5	7.15	21.4	13,390	1.9	-143.7	8.6	↓	B) ded bladder pump
	957	9.33	2.0	7.10	21.1	13,400	1.5	-143.8	8.2		C) non-ded bladder pump; or
	1000	9.35	2.5	7.08	21.1	13,400	1.4	-144.2	7.7		*Standard groundwater sample:*
	1002	9.37	3.0	7.07	21.1	13,410	1.3	-144.6	7.5		D) bailer due to limited column; or
	1005	9.39	3.5	7.07	21.2	13,410	1.3	-144.9	6.9		E) recovery well cycling sample
↓	1007	9.40	4.0	7.06	21.2	13,410	1.2	-145.3	6.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1010	OCD-8A	9.40	7.06	21.2	13,410	1.2	-145.3	6.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-8B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	900	NA	8.77	0.0	56.65	51.7	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	905	8.80	0.5	6.76	23.4	9770	1.8	-47.4	16.1	Clear	*Low-flow groundwater sample:*
	907	8.81	1.0	6.81	22.6	9850	1.4	-62.0	12.5		(A) peristaltic pump w/ ded tubing
	910	8.81	1.5	6.85	22.1	9860	1.1	-73.9	10.5		B) ded bladder pump
	912	8.81	2.0	6.87	21.7	9850	1.0	-80.9	9.8		C) non-ded bladder pump; or
	915	8.81	2.5	6.89	21.5	9840	0.9	-86.3	9.4		*Standard groundwater sample:*
	917	8.81	3.0	6.90	21.4	9830	0.9	-91.1	8.7		D) bailer due to limited column; or
	920	8.81	3.5	6.91	21.3	9820	0.8	-93.3	8.5		E) recovery well cycling sample
↓	922	8.81	4.0	6.92	21.3	9820	0.8	-95.3	8.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	925	OCD-8B	8.81	6.92	21.3	9820	0.8	-95.3	8.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - P4
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; (short) stick-up) Initials: BRH

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1110	NA	4.36	0.0	30.26	22.8	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 60
4-26-17	830	NA	4.37	0.0	30.26							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	835	4.67	0.5	7.80	16.6	5800	2.8	45.2	12.1	clear	*Low-flow groundwater sample:*
	838	4.84	1.0	7.72	16.7	5720	1.7	60.8	10.0		(A) peristaltic pump w/ ded tubing
	840	4.88	1.5	7.57	16.7	5690	1.2	68.1	9.3		B) ded bladder pump
	843	4.89	2.0	7.46	16.8	5670	1.2	73.2	8.6		C) non-ded bladder pump; or
	845	4.89	2.5	7.39	16.8	5640	1.3	77.1	7.9		*Standard groundwater sample:*
	848	4.90	3.0	7.34	16.8	5620	1.3	80.4	7.4		D) bailer due to limited column; or
	850	4.90	3.5	7.31	16.9	5610	1.2	81.9	7.0		E) recovery well cycling sample
	853	4.90	4.0	7.29	16.9	5610	1.2	83.6	6.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	855	KWB-P4	4.90	7.29	16.9	5610	1.2	83.6	6.8	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-25
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1125	NA	11.62	0.0	28.18	23.2	Yes	Yes	Yes	Yes	subsidence under pad	Weather: Sunny, 70s
4-26-17	1445	NA	11.65	0.0	28.18							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1450	12.03	0.5	7.63	19.6	13,560	2.4	67.4	8.1	Clear	*Low-flow groundwater sample:*
	1453	12.07	1.0	7.56	19.6	13,930	1.3	71.3	5.5		(A) peristaltic pump w/ ded tubing
	1455	12.07	1.5	7.47	19.6	14,210	0.9	75.5	4.7		B) ded bladder pump
	1458	12.07	2.0	7.40	19.7	14,270	0.7	77.0	3.4		C) non-ded bladder pump; or
	1500	12.07	2.5	7.36	19.7	14,310	0.7	78.4	2.8		*Standard groundwater sample:*
	1503	12.07	3.0	7.33	19.7	14,320	0.6	79.8	2.3		D) bailer due to limited column; or
	1505	12.07	3.5	7.30	19.7	14,340	0.6	80.3	2.0		E) recovery well cycling sample
	1508	12.07	4.0	7.28	19.7	14,350	0.5	81.2	1.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1510	MW-25	12.07	7.28	19.7	14,350	0.5	81.2	1.8	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-8 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1130	NA	12.65	0.0	15.20	Not Sampled	Issue	Issue	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0		PVC well is approx 2.0' below top						A) peristaltic pump w/ ded tubing
			1.5		of metal protective casing. Unable to						B) ded bladder pump
			2.0		access top of well, so no cap is present.						C) non-ded bladder pump; or
			2.5		DTW & TD measured from top of						*Standard groundwater sample:*
			3.0		metal casing. HMI suggests metal protective						D) bailer due to limited column; or
			3.5		casing should be cut down.						E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-1R
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1135	NA	10.95	0.0	20.63	15.6	Yes	Issue	Yes	yes		Weather: Sunny, 70s
4-26-17	1535	NA	10.98	0.0	20.63			↳				

↳ Casing + lid are bent, making closure difficult. well still locks + is functional

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1540	11.14	0.5	7.73	19.1	12,210	2.8	-109.4	67.0	clear w/ orange	*Low-flow groundwater sample:*
	1543	11.14	1.0	7.60	19.0	12,290	1.0	-111.8	87.0	algae particles	(A) peristaltic pump w/ ded tubing
	1545	11.14	1.5	7.52	18.9	12,380	0.7	-113.5	64.0		B) ded bladder pump
	1548	11.14	2.0	7.41	18.8	12,410	0.6	-116.1	51.0		C) non-ded bladder pump; or
	1550	11.14	2.5	7.32	18.8	12,420	0.6	-118.3	48.6		*Standard groundwater sample:*
	1553	11.14	3.0	7.27	18.7	12,440	0.5	-120.2	43.5		D) bailer due to limited column; or
	1555	11.14	3.5	7.25	18.7	12,450	0.5	-121.7	41.7		E) recovery well cycling sample
	1558	11.14	4.0	7.23	18.7	12,460	0.5	-122.8	42.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1600	MW-1R	11.14	7.23	18.7	12,460	0.5	-122.8	42.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-15
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1140	NA	11.85	0.0	21.70	17.7	Yes	Yes	Yes	Yes		Weather: Sunny, 70s
4-26-17	1625	NA	11.88	0.0	21.70							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1630	11.92	0.5	7.91	21.2	10,960	3.1	44.9	6.1	clear	*Low-flow groundwater sample:*
	1633	11.92	1.0	7.80	20.8	10,610	1.2	47.3	4.6		(A) peristaltic pump w/ ded tubing
	1635	11.92	1.5	7.73	20.5	10,340	0.9	45.1	3.7		B) ded bladder pump
	1638	11.92	2.0	7.58	20.4	9,980	0.8	45.5	3.4		C) non-ded bladder pump; or
	1640	11.92	2.5	7.48	20.3	9,910	0.7	45.8	2.8		*Standard groundwater sample:*
	1643	11.92	3.0	7.44	20.3	9,850	0.6	46.1	2.3		D) bailer due to limited column; or
	1645	11.92	3.5	7.40	20.2	9,830	0.6	45.7	2.0		E) recovery well cycling sample
	1648	11.92	4.0	7.39	20.2	9,810	0.6	45.3	1.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1650	MW-15	11.92	7.39	20.2	9810	0.6	45.3	1.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank - EP-03

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-1R
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1150	NA	12.33	0.0	23.89	18.6	Yes	Issue	Yes	Yes		Weather: Sunny, 70
4-26-17	1400	NA	12.39	0.0	23.89							

↳ Casing lid does not fully close. pvc casing needs to be cut down for full closure. well is secured w/ long-hasp lock.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1405	12.57	0.5	7.70	20.1	9680	3.0	12.8	10.1	clear	*Low-flow groundwater sample:*
	1408	12.59	1.0	7.59	19.6	9860	1.8	13.1	7.8		(A) peristaltic pump w/ ded tubing
	1410	12.60	1.5	7.48	19.4	9920	1.3	17.5	6.9		B) ded bladder pump
	1413	12.60	2.0	7.38	19.2	9990	1.1	20.3	6.8		C) non-ded bladder pump; or
	1415	12.60	2.5	7.30	19.1	10,080	0.9	21.8	5.1		*Standard groundwater sample:*
	1418	12.60	3.0	7.25	19.1	10,110	0.8	22.1	4.5		D) bailer due to limited column; or
	1420	12.60	3.5	7.23	19.0	10,120	0.7	22.6	4.2		E) recovery well cycling sample
	1423	12.60	4.0	7.22	19.0	10,140	0.7	22.4	3.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1425	OCD-1R	12.60	7.22	19.0	10,140	0.7	22.4	3.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500-~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 2A
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1157	NA	12.42	0.0	27.58	22.3	Yes	Yes	Yes	Yes		Weather: Sunny, 60s
4-26-17	1310	NA	12.47	0.0	27.58							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1315	12.59	0.5	7.61	19.6	7360	2.4	-125.8	16.4	Clear w/ orange	*Low-flow groundwater sample:*
	1318	12.60	1.0	7.57	19.3	7350	1.4	-126.1	12.0	algae particles	(A) peristaltic pump w/ ded tubing
	1320	12.60	1.5	7.52	19.2	7330	1.0	-127.0	10.3		B) ded bladder pump
	1323	12.60	2.0	7.45	19.1	7320	0.7	-126.4	9.7		C) non-ded bladder pump; or
	1325	12.60	2.5	7.42	19.1	7300	0.6	-125.3	8.6		*Standard groundwater sample:*
	1328	12.60	3.0	7.40	19.0	7290	0.6	-124.2	8.4		D) bailer due to limited column; or
	1330	12.60	3.5	7.38	19.0	7280	0.5	-123.4	7.9		E) recovery well cycling sample
	1333	12.60	4.0	7.37	19.0	7270	0.5	-122.8	7.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1340	OCD-2A	12.60	7.37	19.0	7270	0.5	-122.8	7.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 2B (Gauge only) (2-in; stickup)
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1200	NA	11.36	0.0	50.39	Not Sampled	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-3
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1205	NA	12.94	0.0	25.48	20.2	Yes	Yes	Yes	Yes	Pad is	Weather: Sunny, 60s
4-26-17	1225	NA	~~12.98 BRH~~ 12.98	0.0	25.48						destroyed	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1230	13.11	0.5	7.61	20.4	8530	2.9	80.6	12.1	clear	*Low-flow groundwater sample:*
	1233	13.12	1.0	7.58	20.0	8320	2.0	82.5	8.6		(A) peristaltic pump w/ ded tubing
	1235	13.12	1.5	7.47	19.8	8250	1.7	83.3	7.2		B) ded bladder pump
	1238	13.12	2.0	7.38	19.7	8200	1.4	84.1	6.9		C) non-ded bladder pump; or
	1240	13.12	2.5	7.31	19.7	8190	1.3	84.7	6.5		*Standard groundwater sample:*
	1243	13.12	3.0	7.27	19.7	8180	1.2	85.3	6.1		D) bailer due to limited column; or
	1245	13.12	3.5	7.24	19.8	8180	1.1	85.8	5.9		E) recovery well cycling sample
	1248	13.12	4.0	7.23	19.8	8170	1.1	86.2	5.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1250	OCD-3	13.12	7.23	19.8	8170	1.1	86.2	5.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-4
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1210	NA	12.20	0.0	25.42	20.1	Yes	Yes	Yes	Yes	Subsidence	Weather: Sunny, windy, 60s
4-26-17	925	NA	12.25	0.0	25.42						under pad	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	930	12.27	0.5	7.87	18.9	12,950	2.0	53.8	48.1	clear w/ orange	*Low-flow groundwater sample:*
	933	12.27	1.0	7.65	18.8	13,160	1.2	22.0	26.7	algae particles	(A) peristaltic pump w/ ded tubing
	935	12.27	1.5	7.53	18.8	13,190	0.9	9.1	21.9		B) ded bladder pump
	938	12.27	2.0	7.48	18.8	13,210	0.7	3.6	20.4		C) non-ded bladder pump; or
	940	12.27	2.5	7.41	18.7	13,220	0.7	-1.6	18.9		*Standard groundwater sample:*
	943	12.27	3.0	7.37	18.7	13,220	0.6	-4.1	18.4		D) bailer due to limited column; or
	945	12.27	3.5	7.35	18.8	13,230	0.6	-4.9	18.1		E) recovery well cycling sample
	948	12.27	4.0	7.33	18.8	13,230	0.6	-5.7	17.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	950	OCD-4	12.27	7.33	18.8	13,230	0.6	-5.7	17.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-11A
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1215	NA	9.69	0.0	22.01	17.0	Yes	Yes	Yes	Yes		Weather: Sunny, 60s
4-26-17	1055	NA	9.74	0.0	22.01							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1100	9.84	0.5	7.40	19.5	27,200	2.6	18.9	16.8	clear	*Low-flow groundwater sample:*
	1103	9.84	1.0	7.30	19.3	27,400	1.3	10.1	10.1		(A) peristaltic pump w/ ded tubing
	1105	9.84	1.5	7.22	19.2	27,500	0.9	3.6	9.4		B) ded bladder pump
	1108	9.84	2.0	7.16	19.1	27,600	0.6	-0.8	9.0		C) non-ded bladder pump; or
	1110	9.84	2.5	7.08	19.1	27,600	0.6	-1.9	8.7		*Standard groundwater sample:*
	1113	9.84	3.0	7.05	19.1	27,700	0.7	-2.4	8.4		D) bailer due to limited column; or
	1115	9.84	3.5	7.03	19.0	27,700	0.7	-3.0	8.2		E) recovery well cycling sample
	1118	9.84	4.0	7.02	19.0	27,800	0.7	-3.4	8.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1120	MW-11A	9.84	7.02	19.0	27,800	0.7	-3.4	8.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-11B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; Stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1218	NA	9.66	0.0	47.30	42.3	Yes	Yes	Yes	Yes		Weather: Sunny, 60s
4-26-17	1140	NA	9.68	0.0	47.30							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1145	9.70	0.5	7.72	20.1	16,980	2.6	-89.3	10.1	clear	*Low-flow groundwater sample:*
	1148	9.70	1.0	7.60	20.0	17,420	1.6	-90.1	8.7		(A) peristaltic pump w/ ded tubing
	1150	9.70	1.5	7.48	19.9	17,840	1.2	-87.6	5.9		B) ded bladder pump
	1153	9.70	2.0	7.38	19.8	18,510	1.0	-85.8	4.3		C) non-ded bladder pump; or
	1155	9.70	2.5	7.29	19.8	18,600	0.9	-84.7	3.7		*Standard groundwater sample:*
	1158	9.70	3.0	7.22	19.8	18,620	0.9	-83.9	3.1		D) bailer due to limited column; or
	1200	9.70	3.5	7.19	19.8	18,640	0.8	-83.1	2.8		E) recovery well cycling sample
	1203	9.70	4.0	7.17	19.8	18,660	0.8	-82.7	2.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1205	MW-11B	9.70	7.17	19.8	18,660	0.8	-82.7	2.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-5
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1225	NA	10.40	0.0	25.42	20.6	Yes	Yes	Yes	Yes	Pad	Weather: Sunny, 60s
4-26-17	1010	NA	10.45	0.0	25.42					severely cracked		

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-26-17	1015	10.52	0.5	7.76	19.0	14,610	2.8	-42.8	81.0	sl. cloudy, orange	*Low-flow groundwater sample:*
	1018	10.52	1.0	7.61	19.1	14,620	1.2	-41.0	64.0	algae particles	(A) peristaltic pump w/ ded tubing
	1020	10.52	1.5	7.58	19.1	14,650	1.0	-42.6	48.7		B) ded bladder pump
	1023	10.52	2.0	7.53	19.0	14,680	0.8	-45.4	36.9		C) non-ded bladder pump; or
	1025	10.52	2.5	7.47	19.0	14,700	0.7	-48.1	35.8		*Standard groundwater sample:*
	1028	10.52	3.0	7.42	19.0	14,710	0.7	-50.7	34.7		D) bailer due to limited column; or
	1030	10.52	3.5	7.41	18.9	14,710	0.6	-51.7	35.2		E) recovery well cycling sample
	1033	10.52	4.0	7.40	18.9	14,720	0.6	-52.6	36.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-26-17	1035	OCD-5	10.52	7.40	18.9	14,720	0.6	-52.6	36.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-87
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1250	NA	8.58	0.0	20.39	15.1	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1700	8.70	0.5	7.53	21.8	14,920	2.7	-106.3	8.1	clear	*Low-flow groundwater sample:*
	1703	8.75	1.0	7.48	21.2	15,040	1.4	-112.1	5.9		(A) peristaltic pump w/ ded tubing
	1705	8.79	1.5	7.43	20.9	15,130	1.0	-117.3	4.7		B) ded bladder pump
	1708	8.82	2.0	7.41	20.7	15,180	0.8	-119.0	3.3		C) non-ded bladder pump; or
	1710	8.85	2.5	7.38	20.6	15,200	0.8	-120.6	3.0		*Standard groundwater sample:*
	1713	8.88	3.0	7.36	20.6	15,220	0.7	-121.8	2.6		D) bailer due to limited column; or
	1715	8.91	3.5	7.35	20.5	15,230	0.7	-122.4	2.1		E) recovery well cycling sample
	1718	8.94	4.0	7.34	20.4	15,230	0.6	-122.9	1.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1720	MW-87	8.94	7.34	20.4	15,230	0.6	-122.9	1.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18A
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1300	NA	10.29	0.0	22.55	17.9	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1305	10.51	0.5	6.60	23.3	5780	2.9	-131.2	6.1	clear	*Low-flow groundwater sample:*
	1308	10.60	1.0	6.84	23.0	5930	1.8	-127.8	4.0		(A) peristaltic pump w/ ded tubing
	1310	10.67	1.5	7.01	22.4	6190	1.3	-134.5	2.8		B) ded bladder pump
	1313	10.73	2.0	7.09	21.5	6430	1.1	-141.0	2.3		C) non-ded bladder pump; or
	1315	10.78	2.5	7.12	21.3	6680	0.9	-146.2	2.1		*Standard groundwater sample:*
	1318	10.82	3.0	7.13	21.2	6710	0.7	-149.1	1.9		D) bailer due to limited column; or
	1320	10.85	3.5	7.15	21.2	6720	0.6	-151.3	1.6		E) recovery well cycling sample
	1323	10.88	4.0	7.16	21.2	6730	0.6	-152.7	1.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1330	MW-18A	10.88	7.16	21.2	6730	0.6	-152.7	1.4	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18B
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BZH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1350	NA	10.27	0.0	50.59	45.6	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1355	10.30	0.5	7.32	23.8	5730	2.8	-14.2	5.1	clear	*Low-flow groundwater sample:*
	1358	10.30	1.0	7.27	23.2	5680	1.4	-10.8	3.6		(A) peristaltic pump w/ ded tubing
	1400	10.30	1.5	7.21	23.0	5390	1.0	-9.0	2.8		B) ded bladder pump
	1403	10.30	2.0	7.16	22.9	5210	0.6	-7.2	2.1		C) non-ded bladder pump; or
	1405	10.30	2.5	7.12	22.8	5140	0.6	-6.8	1.7		*Standard groundwater sample:*
	1408	10.30	3.0	7.08	22.7	5030	0.5	-6.2	1.3		D) bailer due to limited column; or
	1410	10.30	3.5	7.05	22.6	4970	0.5	-5.9	1.0		E) recovery well cycling sample
	1413	10.30	4.0	7.04	22.6	4950	0.6	-5.5	0.8		F) irrigation well grab sample
	1415	10.30	4.5	7.03	22.5	4940	0.6	-5.3	0.7		

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1420	MW-18B	10.30	7.03	22.5	4940	0.6	-5.3	0.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18T (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1255	NA	10.06	0.0	50.39	Not Sampled	NO	ISSUE	ISSUE	Yes		Weather: Sunny, windy, 80s
			↳ measured from highest point on PVC					(missing lid)	(lock won't resolve issue)			
								↳ Top of PVC casing shattered. Needs repairs to allow usage of a cap.				

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-70
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; Stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1455	NA	8.10	0.0	22.05	16.8	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1500	8.16	0.5	7.36	22.7	6210	2.1	-88.7	61.0	Clear w/ orange	*Low-flow groundwater sample:*
	1503	8.16	1.0	7.32	22.2	6240	1.7	-87.1	37.9	algae particles	(A) peristaltic pump w/ ded tubing
	1505	8.17	1.5	7.28	21.9	6270	1.1	-86.0	28.1	↓	B) ded bladder pump
	1508	8.17	2.0	7.23	21.7	6290	0.7	-85.2	19.7	↓	C) non-ded bladder pump; or
	1510	8.17	2.5	7.20	21.6	6300	0.7	-84.5	10.5	clear	*Standard groundwater sample:*
	1513	8.17	3.0	7.18	21.5	6310	0.6	-83.9	9.6	↓	D) bailer due to limited column; or
	1515	8.17	3.5	7.17	21.5	6310	0.6	-83.5	8.4	↓	E) recovery well cycling sample
↓	1518	8.17	4.0	7.16	21.4	6320	0.5	-82.9	8.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1520	MW-70	8.17	7.16	21.4	6320	0.5	-82.9	8.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+EB-EP-02 (same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-124
Event: Spring 2017 (Biennial)
Area of Concern: EP (2-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1555	NA	9.62	0.0	22.01	17.0	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-25-17	1600	9.65	0.5	7.39	21.4	11,130	3.1	-100.4	72.0	clear w/ orange	*Low-flow groundwater sample:*
	1603	9.65	1.0	7.38	20.8	11,290	1.5	-104.8	48.7	algae particles	(A) peristaltic pump w/ ded tubing
	1605	9.65	1.5	7.34	20.4	11,420	1.1	-101.3	31.4		B) ded bladder pump
	1608	9.65	2.0	7.29	20.0	11,490	0.8	-99.1	26.5		C) non-ded bladder pump; or
	1610	9.65	2.5	7.24	19.9	11,560	0.7	-97.0	21.8		*Standard groundwater sample:*
	1613	9.65	3.0	7.22	19.8	11,610	0.7	-95.8	20.7		D) bailer due to limited column; or
	1615	9.65	3.5	7.21	19.7	11,640	0.6	-94.9	20.2		E) recovery well cycling sample
	1618	9.65	4.0	7.20	19.6	11,660	0.6	-94.1	19.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-25-17	1620	MW-124	9.65	7.20	19.6	11,660	0.6	-94.1	19.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	HNO_3	~~Field filtered 0.45-u~~
	1640	EB-EP-02	NA							~~Cyanide~~	~~NaOH~~	~~SM4500~~
										Same analysis	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* Driveway near bldg A/C unit

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-52
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	909	NP	17.74	0.0	34.67	29.5	Yes	Yes	Issue*	Yes		Weather: Sunny, 60s
4-27-17	830	NP	17.64	0.0	34.67				missing	9/16 bolts		

↳ Note: Bolts will not fit with current at-grade plate. Holes do not line up.

Well Purging Record

*SC confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	835	17.67	0.5	7.00	20.9	4980	3.6	116.7	8.3	Clear	*Low-flow groundwater sample:*
	838	17.68	1.0	6.94	20.9	5120	1.8	118.3	6.7		(A) peristaltic pump w/ ded tubing
	840	17.68	1.5	6.90	21.0	5210	1.3	117.4	5.8		B) ded bladder pump
	843	17.68	2.0	6.88	21.0	5230	1.2	117.0	5.2		C) non-ded bladder pump; or
	845	17.68	2.5	6.86	21.0	5240	0.9	116.3	4.7		*Standard groundwater sample:*
	848	17.68	3.0	6.85	21.1	5240	0.8	115.4	4.1		D) bailer due to limited column; or
	850	17.68	3.5	6.84	21.2	5250	0.7	115.1	3.9		E) recovery well cycling sample
	853	17.68	4.0	6.84	21.2	5250	0.7	114.9	3.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	855	MW-52	17.68	6.84	21.2	5250	0.7	114.9	3.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* East side of blue bldg.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-109
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	904	NP	16.01	0.0	29.48	25.5	Yes	Yes	Yes	Yes		Weather: Sunny, 60s
4-27-17	915	NP	15.93	0.0	29.48							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	920	16.09	0.5	6.94	22.6	2750	4.0	-320.5	20.6	Clear w/ black	*Low-flow groundwater sample:*
	923	16.16	1.0	6.91	22.6	2990	1.6	-331.7	12.7	tint, odor	(A) peristaltic pump w/ ded tubing
	925	16.21	1.5	6.88	22.7	3260	1.0	-346.4	10.3		B) ded bladder pump
	928	16.23	2.0	6.85	22.7	3310	0.8	-358.7	9.1		C) non-ded bladder pump; or
	930	16.25	2.5	6.84	22.7	3340	0.6	-363.8	6.8		*Standard groundwater sample:*
	933	16.26	3.0	6.83	22.8	3350	0.5	-366.1	6.0		D) bailer due to limited column; or
	935	16.27	3.5	6.83	22.8	3360	0.5	-367.8	4.9		E) recovery well cycling sample
	938	16.28	4.0	6.82	22.8	3370	0.4	-369.2	4.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	940	MW-109	16.28	6.82	22.8	3370	0.4	-369.2	4.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Gd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Gd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* West-side driveway of blue bldg.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-110
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BEH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	900	NA	13.99	0.0	29.74	24.7	Yes	Yes	Yes	Yes		Weather: Sunny, 60s
4-27-17	1000	NA	13.86	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	1005	14.00	0.5	7.47	22.9	1866	2.9	-313.2	18.1	clear, odor	*Low-flow groundwater sample:*
	1008	14.06	1.0	7.35	22.8	1860	1.2	-324.1	10.3		(A) peristaltic pump w/ ded tubing
	1010	14.11	1.5	7.27	22.8	1858	0.9	-331.8	8.6		B) ded bladder pump
	1013	14.14	2.0	7.16	22.8	1843	0.7	-338.6	7.4		C) non-ded bladder pump; or
	1015	14.17	2.5	7.11	22.7	1837	0.6	-343.5	7.1		*Standard groundwater sample:*
	1018	14.18	3.0	7.08	22.7	1832	0.5	-346.1	6.8		D) bailer due to limited column; or
	1020	14.19	3.5	7.06	22.6	1829	0.5	-348.7	6.3		E) recovery well cycling sample
	1023	14.20	4.0	7.05	22.6	1827	0.5	-349.9	6.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	1025	MW-110	14.20	7.05	22.6	1827	0.5	-349.9	6.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Not in "Sampling" Program due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-13 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25-17	1016	NA	12.40	0.0	21.10	Not Sampled	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-69 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1010	NA	11.53	0.0	22.50	Not Sampled	Yes	Yes	Yes	Yes		Weather: Sunny, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-12 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	1005	NA	10.76	0.0	17.93	Not Sampled	Yes	Yes	Yes	Yes		Weather: Clear, windy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program due to location E. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-24 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	945	NA	12.46	0.0	23.51	Not Sampled	Yes	Yes	Issue	Yes		Weather: windy, 80s

↳ Broken hasp/hinge. well is locked but will not close securely.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-14 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4-25-17	955	NA	11.84	0.0	211.93	NA	Yes	Issue	Yes	Yes		Weather: windy, 80s
								↳ Blockage at 11.93' TOC				

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Recently off, due to water rights issue

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Sample part of RW is active

Well: RW-12R
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Above-grade recovery vault
12-in well casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: AS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1249	NA	21.04	0.0	NM	Top of Pump	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/27/17	1205	NA	21.23	0.0		(If not running)						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1210	21.26	0.5	9.34	22.4	4269	0.8	-186.4	13.8	Clear (strong HC odor)	Low-flow groundwater sample:
	1213	21.26	1.0	9.18	22.1	4018	0.6	-198.2	11.6	" "	(A) peristaltic pump w/ ded tubing
	1215	21.26	1.5	9.13	19.9	3978	0.5	-202.7	10.9	" "	B) ded bladder pump
	1218	21.26	2.0	9.08	19.8	3875	0.4	-205.8	9.9	" "	C) non-ded bladder pump; or
	1220	21.26	2.5	9.05	19.7	3871	0.3	-207.3	9.4	" "	Standard groundwater sample:
	1223	21.26	3.0	9.02	19.7	3869	0.3	-208.4	8.9	" "	D) bailer due to limited column; or
	1225	21.26	3.5	9.02	19.7	3864	0.2	-209.6	8.7	" "	E) recovery well cycling sample
	1228	21.26	4.0	9.01	19.7	3861	0.2	-210.1	8.6	" "	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1230	RW-12R	21.26	9.01	19.7	3861	0.2	-210.1	8.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Meat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ EB-Rest-01
+ DUP-Rest-01
(both are same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-113
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1259	NA	20.98	0.0	37.80	33.8	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4-27-17	845	NA	21.13	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	850	21.17	0.5	6.17	22.1	3120	2.5	-78.7	7.4	Clear	*Low-flow groundwater sample:*
"	852	21.17	1.0	6.32	22.1	3060	2.3	-71.0	7.1	"	(A) peristaltic pump w/ ded tubing
	855	21.18	1.5	6.39	22.1	3020	2.2	-66.0	6.8	"	B) ded bladder pump
	857	21.18	2.0	6.44	22.0	3000	2.2	-60.0	6.5	"	C) non-ded bladder pump; or
	900	21.18	2.5	6.47	21.9	2980	2.1	-55.7	6.3	"	*Standard groundwater sample:*
	902	21.18	3.0	6.49	21.9	2970	2.1	-52.9	5.8	"	D) bailer due to limited column; or
	905	21.18	3.5	6.51	21.8	2960	2.0	-53.2	5.4	"	E) recovery well cycling sample
↓	907	21.18	4.0	6.53	21.7	2920	2.0	-49.6	5.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	910	MW-113	21.18	6.53	21.7	2920	2.0	-49.6	5.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1000	DUP-Rest-01	21.18	6.53	21.7	2920	2.0	-49.6	5.1	Same analysis	Same	Same
	935	EB-Rest-01	NA							Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-8
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information * (Visible on probe, dark brown) (2-in; stickup) Initials: BS

Date	Time	Depth to *LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4/25/17	1710	19.26	19.27	0.01	35.80	30.8	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record used asorbent pad tie wrapped to waterlevel probe to remove LNAPL prior to Sampling

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1715	19.36	0.5	7.13	23.2	3370	2.1	-177.8	10.2	Clear (strong HC odor)	*Low-flow groundwater sample:*
|	1718	19.38	1.0	6.97	22.8	3416	1.8	-188.4	9.1	" "	(A) peristaltic pump w/ ded tubing
|	1720	19.39	1.5	6.82	22.1	3593	1.5	-191.8	8.6	" "	B) ded bladder pump
|	1723	19.39	2.0	6.78	21.3	3610	1.3	-193.1	8.3	" "	C) non-ded bladder pump; or
|	1725	19.39	2.5	6.77	21.2	3616	1.1	-195.6	7.9	" "	*Standard groundwater sample:*
|	1728	19.39	3.0	6.77	21.2	3619	1.0	-196.2	7.7	" "	D) bailer due to limited column; or
|	1730	19.39	3.5	6.77	21.2	3624	0.9	-197.1	7.6	" "	E) recovery well cycling sample
↓	1733	19.39	4.0	6.76	21.2	3622	0.9	-197.7	7.4	" "	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1735	KWB-8	19.39	6.76	21.2	3622	0.9	-197.7	7.4	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-22
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Above-grade Recovery Vault
12-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Screen: 11.5-39) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1658	26.68	29.13	2.45	NM	NA	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record

Sample port with active RW

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0	Not sampled due to LNAPL ≥ 0.03'							A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-22								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

metal roof canopy — RW-20A — vault — RW-20B

Well: RW-20A
Event: Spring 2017 (Biennial)
Area of Concern: Rest

At-grade vault
6-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4/25/17	1635	unable to gauge	>19.98 top of pump	unable to determine thickness	NM	Sample Port	Yes (NA)	Yes	Yes	Yes		Weather: Sunny Windy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	Opened sample port only product was being discharged, therefore not sampled.							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments: Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-20A								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Metal Roof Canopy — RW-20A — - - - - - Vault — RW-20B

Well: RW-20B
Event: Spring 2017 (Biennial)
Area of Concern: Rest

At-grade vault
6-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BK

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1645	20.30	>20.48	>0.18	NM	Sample Port	Yes (NA)	Yes	Yes	Yes		Weather: Sunny Windy 80s
			top of pump									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0	Not sampled due to LNAPL ≥ 0.03'							A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-20B								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-13R
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Above-grade vault
12-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1310	19.53	19.64	0.11	NM	Sample	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
					pump in well	~~Rod~~						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	Not Sampled due to product ≥ 0.03'							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-13R								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-14R
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Above-grade vault
12-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1318	16.92	17.98	1.06	NM	Sample port	x<5	Yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0	Not	sampled	due	to	product			A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0		0.03						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-14R								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-133
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BS

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1327	16.77	17.06	0.29	37.64	27.9	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
					Sand							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5	Not Sampled due to product							B) ded bladder pump
			2.0	greater than 0.03'							C) non-ded bladder pump; or
			2.5	(or equal to)							*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-133								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Trip Blank - Rest-01

+ DUP-Rest-03
+ EB - Rest-03
(both for same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-134
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1345	NP	14.16	0.0	32.95	28.4	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/26/17	820	NA	14.16	0.0	Same							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	825	14.16	0.5	6.98	19.8	4450	2.4	31.7	10.1	Clear	*Low-flow groundwater sample:*
	828	14.16	1.0	6.81	19.2	5038	1.7	62.4	8.2	"	(A) peristaltic pump w/ ded tubing
	830	14.16	1.5	6.72	19.1	5043	1.4	79.8	6.8	"	B) ded bladder pump
	833	14.17	2.0	6.68	18.9	5045	1.2	91.3	5.9	"	C) non-ded bladder pump; or
	835	14.17	2.5	6.65	18.8	5045	1.1	98.6	5.1	"	*Standard groundwater sample:*
	838	14.17	3.0	6.63	18.8	5046	1.0	103.4	4.7	"	D) bailer due to limited column; or
	840	14.17	3.5	6.62	18.7	5046	0.9	105.2	4.4	"	E) recovery well cycling sample
	843	14.17	4.0	6.61	18.7	5047	0.9	106.1	4.2	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	845	MW-134	14.17	6.61	18.7	5047	0.9	106.1	4.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				~~Neat~~	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1200	DUP-Rest-03		6.61	18.7	5047	0.9	106.1	4.2	Same analysis	Same	Same
	855	EB-Rest-03	NA							Same analysis	Same	Same
	—	Trip Blank-Rest-01										

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Irrigation well
Inside green, block bldg.
No purge
Sample port (faucet)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-4798
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen 840-850 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/26/17	925	NA	NA	NA	NA	NA	NA	NA	Yes	Yes		Weather: Sunny 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Clear	*Low-flow groundwater sample:*
			1.0	No purge, Sample port							A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	925	RA-4798	NA	7.08	19.6	1150	1.5	79.5	1.1	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~*Short List* Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45 u~~
						~~*Long List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~*Long List* Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45 u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Irrigation well
Inside green, block bldg
No purge
Sample port (faucet)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-4196
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen: 280-292 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/26/17	945	NA	NA	NA	NA	NA	NA	NA	Yes	Yes		Weather: Sunny 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Clear	*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	No purge, active well with sample port.							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	945	RA-4196	NA	7.18	22.5	1968	1.7	51.8	1.7	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Do not address - Removed from program by Navajo, 4-13-15]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-1227
Event: Spring 2017 (Biennial)
Area of Concern: Rest

[Irrigation well Removed from program]

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen: 194-246 ft-bgs

Initials:

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5			DO NOT ADDRESS					B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Irrigation well
No purge
Sample part

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-3156
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/26/17	1015	NA	NA	NA	NA	NA	NA	NA	NA	Yes		Weather: Sunny, Windy 60s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Cloudy with	*Low-flow groundwater sample:*
			1.0		No	purge	irrigation		well	brown particles	A) peristaltic pump w/ ded tubing
			1.5		with	sample	port				B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1015	RA-3156	NM	6.84	20.5	2862	4.2	-46.3	134	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* This event (4/27/17) collected at well head + installed sample port.
* Across the street (East) of MW-101 Tank 105

Monitoring Well Purging and Sampling Record

Irrigation and water supply role, per Navajo shift foreman, Doug Collins, 1116

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-313
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen: 904-1157 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/27/17	930	NA	NA	NA	NA	NA	NA	NA	NA	Yes		Weather Sunny 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Clear	*Low-flow groundwater sample:*
			1.0	Removed gauge + installed							A) peristaltic pump w/ ded tubing
			1.5	temporary sample port							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5	Navajo plant manager turned well on.							*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5	Removed sample port + reinstalled gauge							E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	930	RA-313	NM	7.08	20.7	1303	3.1	-68.4	1.2	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Sock in 1H16
No Sock in 2H16

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-7
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; Stickup) Initials: BS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1232	NA	18.54	0.0	34.83	30.6	Yes	Yes	Yes	Yes	needs new pad	Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1800	18.57	0.5	6.97	21.3	3346	3.4	-96.8	11.2	Clear (strong HC odor)	*Low-flow groundwater sample:*
	1803	18.57	1.0	6.89	20.7	3413	2.0	-102.7	9.8	" "	(A) peristaltic pump w/ ded tubing
	1805	18.57	1.5	6.84	20.4	3410	1.5	-104.6	9.3	" "	B) ded bladder pump
	1808	18.57	2.0	6.79	20.3	3398	1.2	-104.9	8.7	" "	C) non-ded bladder pump; or
	1810	18.57	2.5	6.78	20.2	3395	1.0	-105.2	8.2	" "	*Standard groundwater sample:*
	1813	18.57	3.0	6.78	20.2	3392	0.9	-105.4	7.8	" "	D) bailer due to limited column; or
	1815	18.57	3.5	6.77	20.2	3390	0.8	-105.6	7.6	" "	E) recovery well cycling sample
↓	1818	18.57	4.0	6.77	20.2	3389	0.8	-105.9	7.6	" "	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1820	KWB-7	18.57	6.77	20.2	3389	0.8	-105.9	7.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	~~Neat~~	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* HM1 - dedicated bladder pump

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-135
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1209	NA	26.53	0.0	65.55	50.0	Yes	Yes	Yes	Yes		Weather: Sunny Windy 90's
4/26/17	1625	NA	26.60	0.0								

Well Purging Record

(*All out of Inf. or Cell)

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity * (NTU)	Water Color / Clarity	
4/26/17	1630	26.61	0.5	7.35	19.4	6959	4.2	121.7	112	Clear (tiny white particles)	*Low-flow groundwater sample:*
	1633	26.61	1.0	6.98	19.0	7294	3.9	148.6	93.6	" "	A) peristaltic pump w/ ded tubing
	1635	26.61	1.5	6.77	18.7	7308	3.7	153.8	82.4	" "	(B) ded bladder pump
	1638	26.61	2.0	6.72	18.5	7318	3.6	155.2	74.8	" "	C) non-ded bladder pump; or
	1640	26.61	2.5	6.70	18.4	7323	3.6	156.4	69.7	" "	*Standard groundwater sample:*
	1643	26.61	3.0	6.69	18.4	7329	3.5	157.1	67.2	" "	D) bailer due to limited column; or
	1645	26.61	3.5	6.69	18.3	7333	3.4	157.4	67.1	" "	E) recovery well cycling sample
	1649	26.61	4.0	6.69	18.3	7337	3.4	157.9	66.4	" "	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1650	MW-135	26.61	6.69	18.3	7337	3.4	157.9	66.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-20
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: BB/MDD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1500	NA	10.28	0.0	26.66	21.9	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4-27-17	955	NA	10.37	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	1000	10.41	0.5	7.26	23.2	5166	2.9	18.9	8.8	Clear	*Low-flow groundwater sample:*
	1002	10.42	1.0	7.18	22.6	5280	2.7	24.9	8.2		(A) peristaltic pump w/ ded tubing
	1005	10.42	1.5	7.15	22.4	5306	2.3	31.1	7.6		B) ded bladder pump
	1007	10.42	2.0	7.11	22.2	5310	2.0	34.8	7.1		C) non-ded bladder pump; or
	1010	10.42	2.5	7.09	22.2	5310	1.8	37.2	5.8		*Standard groundwater sample:*
	1012	10.42	3.0	7.07	22.0	5320	1.7	39.8	4.8		D) bailer due to limited column; or
	1015	10.42	3.5	7.06	22.0	5310	1.7	41.1	4.6		E) recovery well cycling sample
	1017	10.42	4.0	7.04	22.0	5310	1.7	42.3	4.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	1020	MW-20	10.42	7.04	22.0	5310	1.7	42.3	4.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Be,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-3 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1356	NA	11.74	0.0	21.59	Not Sampled	Yes	Yes	Yes	Yes		Weather: Sunny, Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-4 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: TMD

(2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1402	NA	17.79	0.0	36.98	Not Sampled	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-2 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1412	NA	12.83	0.0	21.49	Not Sampled	Yes	Yes	Yes	Yes		Weather Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-1
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1420	NA	13.44	0.0	21.88	19.6	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/26/17	1755	NA	13.45	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1800	13.47	0.5	7.94	19.0	4864	1.9	106.4	4.7	Clear	*Low-flow groundwater sample:*
	1803	13.47	1.0	7.88	18.7	4803	1.5	128.0	3.8	"	(A) peristaltic pump w/ ded tubing
	1805	13.47	1.5	7.84	18.5	4768	1.3	133.2	2.7	"	B) ded bladder pump
	1808	13.47	2.0	7.81	18.4	4742	1.2	135.1	2.3	"	C) non-ded bladder pump; or
	1810	13.47	2.5	7.79	18.3	4735	1.2	135.8	2.0	"	*Standard groundwater sample:*
	1813	13.47	3.0	7.78	18.3	4731	1.1	136.4	1.8	"	D) bailer due to limited column; or
	1815	13.47	3.5	7.77	18.2	4728	1.1	136.7	1.7	"	E) recovery well cycling sample
↓	1818	13.47	4.0	7.76	18.2	4726	1.1	137.1	1.7	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1820	NP-1	13.47	7.76	18.2	4726	1.1	137.1	1.7	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-6
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1429	NA	10.23	0.0	20.35	15.4	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/26/17	1715	NA	10.24	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1720	10.24	0.5	6.82	18.7	6320	2.1	37.7	6.2	Clear	*Low-flow groundwater sample:*
	1723	10.24	1.0	6.73	18.1	6242	1.5	69.4	5.6	"	(A) peristaltic pump w/ ded tubing
	1725	10.24	1.5	6.67	17.9	6236	1.2	74.8	4.9	"	B) ded bladder pump
	1728	10.24	2.0	6.62	17.8	6230	1.0	79.2	4.3	"	C) non-ded bladder pump; or
	1730	10.24	2.5	6.59	17.7	6227	0.9	83.6	4.0	"	*Standard groundwater sample:*
	1733	10.24	3.0	6.57	17.7	6225	0.9	86.4	3.8	"	D) bailer due to limited column; or
	1735	10.24	3.5	6.56	17.7	6224	0.9	88.2	3.8	"	E) recovery well cycling sample
	1738	10.24	4.0	6.56	17.7	6222	0.9	89.1	3.7	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1740	NP-6	10.24	6.56	17.7	6222	0.9	89.1	3.7	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								~~Anions (Chloride,Fluoride,Sulfate)~~			~~Neat~~	~~300~~
							~~Cations (Ca,K,Na), taken from total metals bottle~~				~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
							~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~*Short List* Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45-u~~
						~~*Long List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~*Long List* Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-8
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

(2-inj stickup)

Initials: BB/MDB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1452	NA	9.04	0.0	20.12	15.3	Yes	Yes	Yes	Yes		Weather Sunny Windy 80's
4-27-17	1125	NA	9.17	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	1130	9.19	0.5	7.43	22.5	4460	2.5	26.9	6.4	Clear	*Low-flow groundwater sample:*
	1132	9.19	1.0	7.38	21.7	4350	2.1	31.7	6.0		(A) peristaltic pump w/ ded tubing
	1135	9.19	1.5	7.33	21.3	4270	1.7	35.1	5.8		B) ded bladder pump
	1137	9.19	2.0	7.29	21.2	4240	1.6	38.2	5.2		C) non-ded bladder pump; or
	1140	9.19	2.5	7.26	21.2	4210	1.5	39.9	4.7		*Standard groundwater sample:*
	1142	9.19	3.0	7.24	21.3	4190	1.5	41.5	4.6		D) bailer due to limited column; or
	1145	9.19	3.5	7.22	21.3	4180	1.4	42.4	4.4		E) recovery well cycling sample
↓	1147	9.19	4.0	7.21	21.4	4170	1.4	43.1	4.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	1150	MW-8	9.19	7.21	21.4	4170	1.4	43.1	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-21
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: BB / MDB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1449	NA	10.41	0.0	25.12	19.9	Yes	Yes	Yes	Yes		Weather: Sunny Wind, 80's
4-27-17	1040	NA	10.53									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4-27-17	1045	10.60	0.5	7.40	22.7	5630	2.4	36.3	6.4	Clear	*Low-flow groundwater sample:*
	1047	10.60	1.0	7.32	22.6	5630	2.0	41.2	6.1		(A) peristaltic pump w/ ded tubing
	1050	10.60	1.5	7.28	21.7	5638	1.7	43.4	5.3		B) ded bladder pump
	1052	10.60	2.0	7.24	21.4	5630	1.6	45.4	4.7		C) non-ded bladder pump; or
	1055	10.60	2.5	7.20	21.3	5630	1.4	47.2	4.1		*Standard groundwater sample:*
	1057	10.60	3.0	7.17	21.2	5638	1.4	48.9	3.8		D) bailer due to limited column; or
	1100	10.60	3.5	7.14	21.2	5630	1.4	49.9	3.2		E) recovery well cycling sample
	1102	10.60	4.0	7.10	21.2	5620	1.3	51.9	2.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4-27-17	1105	MW-21	10.60	7.10	21.2	5628	1.3	51.9	2.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ca,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-9
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in ; stickup)

Initials: BS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1442	NA	9.51	0.0	20.19	Not Sampled	Yes	Yes	Yes	Yes	Cracked pad	Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+ Trip Blank - TMD-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-71
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1434	NA	11.71	0.0	21.87	16.9	Yes	Yes	Yes	Yes		Weather: Sunny, Windy, 80's
4/26/17	1040	NA	11.72	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1045	11.74	0.5	7.32	18.5	5844	2.9	98.6	8.7	Clear	*Low-flow groundwater sample:*
	1048	11.74	1.0	7.13	18.1	6079	2.6	109.7	6.4	"	(A) peristaltic pump w/ ded tubing
	1050	11.75	1.5	7.03	17.9	6214	2.5	114.8	5.6	"	B) ded bladder pump
	1053	11.74	2.0	6.98	17.8	6303	2.5	118.6	4.9	"	C) non-ded bladder pump; or
	1055	11.74	2.5	6.96	17.8	6378	2.4	120.2	3.8	"	*Standard groundwater sample:*
	1058	11.74	3.0	6.95	17.8	6402	2.4	121.7	3.5	"	D) bailer due to limited column; or
	1100	11.74	3.5	6.95	17.8	6412	2.4	122.3	3.2	"	E) recovery well cycling sample
↓	1103	11.74	4.0	6.95	17.7	6416	2.4	122.9	3.1	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1105	MW-71	11.74	6.95	17.7	6416	2.4	122.9	3.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
4/26/17	—	Trip Blanks TMD-01 ←								Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	N-ca5	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-68
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1102	NA	15.46	0.0	26.52	21.5	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/26/17	1130	NA	15.52	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1135	15.54	0.5	7.11	20.6	3382	1.8	116.2	9.1	Clear	*Low-flow groundwater sample:*
	1138	15.54	1.0	7.03	20.1	3337	1.3	124.6	8.0	"	(A) peristaltic pump w/ ded tubing
	1140	15.54	1.5	6.97	20.0	3303	0.9	122.4	7.3	"	B) ded bladder pump
	1143	15.54	2.0	6.96	19.9	3292	0.8	121.9	6.4	"	C) non-ded bladder pump; or
	1145	15.54	2.5	6.96	19.8	3286	0.7	121.7	5.9	"	*Standard groundwater sample:*
	1148	15.54	3.0	6.95	19.8	3285	0.6	121.7	5.5	"	D) bailer due to limited column; or
	1150	15.54	3.5	6.95	19.8	3281	0.5	121.6	5.4	"	E) recovery well cycling sample
	1153	15.54	4.0	6.95	19.7	3279	0.5	121.4	5.2	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1155	MW-68	15.54	6.95	19.7	3279	0.5	121.4	5.2	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-27
Event: Spring 2017 (Biennial)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1128	NA	16.06	0.0	30.28	25.0	Yes	Yes	Yes	Yes		Weather: Sunny, Windy 80's
4/26/17	1530	NA	16.11	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1535	16.14	0.5	6.79	21.4	2952	2.0	69.8	7.9	Clear	*Low-flow groundwater sample:*
	1538	16.14	1.0	6.64	21.2	2788	1.5	74.7	7.3	"	(A) peristaltic pump w/ ded tubing
	1540	16.14	1.5	6.60	21.1	2797	1.2	78.6	6.7	"	B) ded bladder pump
	1543	16.14	2.0	6.57	21.0	2794	1.0	81.4	6.2	"	C) non-ded bladder pump; or
	1545	16.14	2.5	6.55	21.0	2791	0.8	83.2	5.8	"	*Standard groundwater sample:*
	1548	16.14	3.0	6.54	20.9	2789	0.7	85.8	5.7	"	D) bailer due to limited column; or
	1550	16.14	3.5	6.53	20.9	2787	0.7	86.1	5.7	"	E) recovery well cycling sample
↓	1553	16.14	4.0	6.53	20.9	2785	0.7	87.3	5.5	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1555	MW-27	16.14	6.53	20.9	2785	0.7	87.3	5.5	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-89
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1139	NA	9.78	0.0	20.28	15.2	yes	yes	yes	yes		Weather: Sunny windy 80s
4/26/17	1430	NA	9.80	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1435	9.82	0.5	7.45	19.3	4144	2.8	29.6	10.3	Clear	*Low-flow groundwater sample:*
	1438	9.83	1.0	7.13	18.5	4123	2.4	42.2	9.9	"	(A) peristaltic pump w/ ded tubing
	1440	9.83	1.5	7.01	18.3	4120	2.1	46.7	8.4	"	B) ded bladder pump
	1443	9.83	2.0	6.97	18.1	4116	1.9	49.8	7.5	"	C) non-ded bladder pump; or
	1445	9.83	2.5	6.95	18.0	4113	1.9	51.2	7.6	"	*Standard groundwater sample:*
	1448	9.83	3.0	6.96	18.0	4112	1.8	51.9	7.5	"	D) bailer due to limited column; or
	1450	9.83	3.5	6.95	17.9	4110	1.8	52.3	7.3	"	E) recovery well cycling sample
✓	1453	9.83	4.0	6.95	17.9	4109	1.7	52.7	7.2	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1455	MW-89	9.83	6.95	17.9	4109	1.7	52.7	7.2	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-16
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1147	NA	8.18	0.0	21.24	16.2	Yes	Yes	yes	Yes		Weather: Sunny Windy 80's
4/26/17	1325	NA	8.25	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1340	8.25	0.5	7.21	18.1	7218	2.1	86.4	9.6	Clear	*Low-flow groundwater sample:*
	1343	8.25	1.0	7.11	18.0	7214	1.4	98.4	7.9	"	(A) peristaltic pump w/ ded tubing
	1345	8.25	1.5	7.02	17.8	7103	1.2	107.6	6.8	"	B) ded bladder pump
	1348	8.25	2.0	6.96	17.7	7058	1.0	112.8	6.2	"	C) non-ded bladder pump; or
	1350	8.25	2.5	6.90	17.7	7052	0.9	114.6	5.8	"	*Standard groundwater sample:*
	1353	8.25	3.0	6.88	17.6	7049	0.9	115.9	5.5	"	D) bailer due to limited column; or
	1355	8.25	3.5	6.86	17.6	7047	0.9	116.7	5.4	"	E) recovery well cycling sample
	1358	8.25	4.0	6.85	17.6	7046	0.8	117.1	5.4	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/26/17	1400	MW-16	8.25	6.85	17.6	7046	0.8	117.1	5.4	DRO	HCL	Lab: ESC Lab Sciences, Mt. Juliet, TN 8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-26
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1156	NA	9.39	0.0	27.58	22.6	Yes	Yes	Yes	Yes		Weather: Sunny windy 80's
4/26/17	1230	NA	9.42	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1235	9.50	0.5	7.09	18.2	8530	1.5	79.2	8.2	Clear	*Low-flow groundwater sample:*
	1238	9.52	1.0	7.01	17.8	8913	1.0	94.6	7.1	"	(A) peristaltic pump w/ ded tubing
	1240	9.52	1.5	6.94	17.6	9007	0.8	97.8	5.6	"	B) ded bladder pump
	1243	9.52	2.0	6.92	17.5	9012	0.7	99.2	4.5	"	C) non-ded bladder pump; or
	1245	9.52	2.5	6.91	17.5	9015	0.7	101.0	4.2	"	*Standard groundwater sample:*
	1248	9.52	3.0	6.90	17.5	9018	0.6	101.8	3.9	"	D) bailer due to limited column; or
	1250	9.52	3.5	6.90	17.5	9020	0.6	101.9	3.8	"	E) recovery well cycling sample
	1253	9.52	4.0	6.89	17.5	9022	0.6	101.9	3.8	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1255	MW-26	9.52	6.89	17.5	9022	0.6	101.9	3.8	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Pecan grove - Access from 82 gate]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 11A
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1217	NA	19.17	0.0	42.27	37.0	Yes	yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1850	19.17	0.5	7.08	19.9	6194	2.5	-13.4	5.2	Clear	*Low-flow groundwater sample:*
	1853	19.17	1.0	6.92	19.5	6216	2.1	-15.5	4.1	"	(A) peristaltic pump w/ ded tubing
	1855	19.17	1.5	6.79	19.3	6228	1.7	-14.2	3.7	"	B) ded bladder pump
	1858	19.17	2.0	6.73	19.2	6234	1.4	-13.8	3.6	"	C) non-ded bladder pump; or
	1900	19.17	2.5	6.71	19.2	6238	1.2	-13.1	3.4	"	*Standard groundwater sample:*
	1903	19.17	3.0	6.70	19.1	6241	1.0	-12.9	3.1	"	D) bailer due to limited column; or
	1905	19.17	3.5	6.70	19.1	6243	0.9	-12.7	2.9	"	E) recovery well cycling sample
	1908	19.17	4.0	6.69	19.1	6244	0.9	-12.3	2.8	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1910	KWB-11A	19.17	6.69	19.1	6244	0.9	-12.3	2.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Pecan grove - access from 82 gate]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-11B
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1221	NA	19.88	0.0	72.45	62.2	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1940	19.94	0.5	6.93	19.3	3211	2.2	63.2	4.8	Clear	*Low-flow groundwater sample:*
	1943	19.96	1.0	6.90	19.1	3042	1.7	65.7	3.2	"	(A) peristaltic pump w/ ded tubing
	1945	19.96	1.5	6.89	19.0	2979	1.3	66.8	2.7	"	B) ded bladder pump
	1948	19.96	2.0	6.89	18.8	2974	1.1	67.3	2.4	"	C) non-ded bladder pump; or
	1950	19.96	2.5	6.89	18.7	2970	1.0	67.9	1.9	"	*Standard groundwater sample:*
	1953	19.96	3.0	6.88	18.7	2966	0.9	68.4	1.6	"	D) bailer due to limited column; or
	1955	19.96	3.5	6.88	18.6	2964	0.8	68.9	1.4	"	E) recovery well cycling sample
↓	1958	19.96	4.0	6.88	18.6	2962	0.8	69.2	1.3	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	2000	KWB-11B	19.96	6.88	18.6	2962	0.8	69.2	1.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Do Not Address this well, per Navajo, 4-13-15

Jack Joy (Farmer)
575-365-6042

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-3AR
Event: Spring 2017 (Biennial)
Area of Concern: Rest

(2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials:

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[ATV needed - S. Field RO-Reject water Field]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-115.
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup)

Initials: BJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1048	NA	5.43	0.0	27.50	19.8	Yes	Yes	Yes	Yes		Weather: Sunny Windy 80's
4/27/17	1015	NA	5.71	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1022	5.74	0.5	6.95	18.7	4295	2.9	85.4	4.2	Clear	*Low-flow groundwater sample:*
	1023	5.75	1.0	6.92	17.9	4259	1.9	88.2	2.7	"	(A) peristaltic pump w/ ded tubing
	1025	5.75	1.5	6.88	17.7	4238	1.5	89.4	2.1	"	B) ded bladder pump
	1028	5.75	2.0	6.85	17.6	4229	1.3	90.3	1.8	"	C) non-ded bladder pump; or
	1030	5.75	2.5	6.83	17.6	4224	1.2	90.8	1.7	"	*Standard groundwater sample:*
	1033	5.75	3.0	6.81	17.5	4221	1.2	91.5	1.5	"	D) bailer due to limited column; or
	1035	5.75	3.5	6.80	17.5	4219	1.1	91.9	1.4	"	E) recovery well cycling sample
	1038	5.75	4.0	6.80	17.5	4217	1.1	92.3	1.4	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1040	MW-115	5.75	6.80	17.5	4217	1.1	92.3	1.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[ATV needed - S. Field RO-Reject Water Field]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-114
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1040	NA	3.63	0.0	58.25	30.5	Yes	Yes	Yes	Yes		Weather Sunny Windy 80's
4/27/17	1105	NA	3.61	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1110	3.64	0.5	7.18	22.3	4029	2.2	134.4	9.4	Clear	*Low-flow groundwater sample:*
|	1113	3.64	1.0	7.07	22.1	3813	1.6	149.8	7.2	"	(A) peristaltic pump w/ ded tubing
|	1115	3.64	1.5	7.00	19.9	3748	1.3	153.4	6.4	"	B) ded bladder pump
|	1118	3.64	2.0	6.98	19.8	3696	1.1	151.3	6.1	"	C) non-ded bladder pump; or
|	1120	3.64	2.5	6.95	19.8	3682	1.0	150.2	5.8	"	*Standard groundwater sample:*
|	1123	3.64	3.0	6.93	19.7	3678	0.9	149.8	5.5	"	D) bailer due to limited column; or
|	1125	3.64	3.5	6.92	19.7	3673	0.9	149.5	5.3	"	E) recovery well cycling sample
V	1128	3.64	4.0	6.91	19.7	3669	0.9	149.1	5.1	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1130	MW-114	3.64	6.91	19.7	3669	0.9	149.1	5.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-117
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1745	NA	9.19	0.0	27.22	19.7	Yes	Yes	Yes	Yes		Weather: Sunny, 50's
4/26/17	830	NA	9.24									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	835	9.26	0.5	7.49	15.7	3810	2.8	67.9	102	Colorless / cloudy	*Low-flow groundwater sample:*
	837	9.26	1.0	7.24	15.7	3800	1.7	72.6	105		(A) peristaltic pump w/ ded tubing
	840	9.26	1.5	7.08	15.7	3790	1.2	73.8	91.2		B) ded bladder pump
	843	9.26	2.0	6.98	15.7	3780	1.1	74.1	82.1		C) non-ded bladder pump; or
	845	9.26	2.5	6.92	15.6	3760	0.9	78.2	66.4	sl. cloudy	*Standard groundwater sample:*
	847	9.26	3.0	6.86	15.7	3760	0.8	78.8	59.8		D) bailer due to limited column; or
	850	9.26	3.5	6.83	15.8	3750	0.8	77.9	61.1		E) recovery well cycling sample
	853	9.26	4.0	6.80	15.8	3740	0.8	80.0	58.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	855	MW-117	9.26	6.80	15.8	3740	0.8	80.0	58.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-118
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1751	NA	11.69	0.0	28.29	21.0	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/26/17	910	NA	11.70									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	915	11.79	0.5	7.28	15.6	4220	4.9	93.9	160	Colorless / cloudy	*Low-flow groundwater sample:*
	917	11.80	1.0	7.14	15.5	4210	4.3	96.1	92.3	↓ ↓	(A) peristaltic pump w/ ded tubing
	920	11.80	1.5	7.05	15.4	4220	4.0	96.0	65.1	Colorless / sl. cloudy	B) ded bladder pump
	923	11.80	2.0	7.01	15.4	4210	4.1	95.5	35.0	↓ ↓	C) non-ded bladder pump; or
	925	11.80	2.5	6.99	15.4	4210	4.1	94.9	27.9	Colorless / clear	*Standard groundwater sample:*
	927	11.80	3.0	6.94	15.5	4210	4.1	93.5	21.7		D) bailer due to limited column; or
	930	11.80	3.5	6.92	15.5	4210	4.0	93.5	16.8		E) recovery well cycling sample
	933	11.80	4.0	6.90	15.5	4220	4.0	94.3	11.1		F) irrigation well grab sample
↓	935	11.80	4.5	6.89	15.5	4220	4.0	94.7	9.2	↓ ↓	

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	940	MW-118	11.80	6.89	15.5	4220	4.0	94.7	9.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" Program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-9
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1758	NA	10.69	0.0	25.89	Not Sampled	Yes	#Issue	#Issue	Yes		Weather: Partly Cloudy, 80's
							by #4000 2" cap					

NEEDS NEW MONUMENT casing lid

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-119
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1807	NA	10.41	0.0	28.11	20.8	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/26/17	1000	NA	10.37		(28.11)							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1005	10.42	0.5	7.37	16.8	3980	3.4	97.1	81.1	colorless / sl. cloudy	*Low-flow groundwater sample:*
	1007	10.44	1.0	7.17	16.6	3960	2.1	93.5	58.2		(A) peristaltic pump w/ ded tubing
	1010	10.44	1.5	7.06	16.4	3960	1.8	91.4	40.8		B) ded bladder pump
	1013	10.44	2.0	6.95	16.2	3960	1.2	88.8	24.0	clear	C) non-ded bladder pump; or
	1015	10.44	2.5	6.91	16.2	3950	1.0	87.3	18.3		*Standard groundwater sample:*
	1017	10.44	3.0	6.87	16.1	3960	0.9	86.3	12.2		D) bailer due to limited column; or
	1020	10.44	3.5	6.83	16.1	3950	0.9	84.3	9.2		E) recovery well cycling sample
	1023	10.44	4.0	6.81	16.1	3950	0.9	82.9	8.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1025	MW-119	10.44	6.81	16.1	3950	0.9	82.9	8.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-5
Event: Spring 2017 (Biennial)
Area of Concern: Rest (Cross-Gradient)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1345	NA	11.56	0.0	25.09	20.0	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1350	11.60	0.5	7.36	21.3	5330	4.3	108.7	19.4	Colorless / Clear	*Low-flow groundwater sample:*
↑	1353	11.60	1.0	7.27	20.1	5400	3.0	108.9	12.8	↓	(A) peristaltic pump w/ ded tubing
	1355	11.60	1.5	7.21	19.7	5410	2.5	108.3	12.0		B) ded bladder pump
	1357	11.60	2.0	7.16	19.2	5410	2.1	107.2	9.9		C) non-ded bladder pump; or
	1400	11.60	2.5	7.12	19.0	5410	1.9	106.1	6.9		*Standard groundwater sample:*
	1403	11.60	3.0	7.08	18.8	5420	1.8	104.8	5.3		D) bailer due to limited column; or
	1405	11.60	3.5	7.05	18.9	5400	1.8	103.2	4.8		E) recovery well cycling sample
↓	1407	11.60	4.0	7.04	18.8	5410	1.7	102.5	5.0	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1410	NP-5	11.60	7.04	18.8	5410	1.7	102.5	5.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[well installed 7-28-14] (cross-gradient; North of RO-Reject Field).

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-136
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1255	NA	11.11	0.0	27.90	23.0	Yes	Yes	Yes	Yes		Weather: partly cloudy, 70's
					64.0FT	BASE						

SI = 10-25' BGS

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1300	11.18	0.5	7.54	20.5	4530	3.5	113.8	45.8	Colorless / sl. cloudy	Low-flow groundwater sample:
	1303	11.18	1.0	7.18	19.7	4520	1.9	113.3	37.8	↓ ↓	(A) peristaltic pump w/ ded tubing
	1305	11.18	1.5	7.06	19.6	4490	1.6	111.5	28.0		B) ded bladder pump
	1307	11.18	2.0	6.95	19.3	4510	1.5	111.3	13.4	Colorless / clear	C) non-ded bladder pump; or
	1310	11.18	2.5	6.89	19.2	4500	1.5	109.9	10.0		Standard groundwater sample:
	1313	11.18	3.0	6.84	19.2	4490	1.5	110.2	9.1		D) bailer due to limited column; or
	1315	11.18	3.5	6.84	19.2	4490	1.4	109.8	8.6		E) recovery well cycling sample
↓	1317	11.18	4.0	6.83	19.2	4490	1.4	109.5	7.7	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1320	MW-136	11.18	6.83	19.2	4490	1.4	109.5	7.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-126A
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1549	NA	12.20	0.0	37.51	29.5	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/27/17	855	NA	12.35									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	900	12.35	0.5	7.00	19.2	3220	2.9	-172.2	57.1	Colorless / sl. cloudy	*Low-flow groundwater sample:*
	903	12.35	1.0	6.75	19.2	3390	1.1	-173.9	36.1	↓ ↓	(A) peristaltic pump w/ ded tubing
	905	12.35	1.5	6.69	19.2	3460	1.0	-176.5	25.8	colorless / clear	B) ded bladder pump
	907	12.35	2.0	6.67	19.3	3480	0.9	-177.2	17.3		C) non-ded bladder pump; or
	910	12.35	2.5	6.64	19.4	3510	0.9	-180.7	12.2		*Standard groundwater sample:*
	913	12.35	3.0	6.63	19.4	3540	0.9	-180.5	9.1		D) bailer due to limited column; or
	915	12.35	3.5	6.62	19.5	3540	0.9	-180.9	7.7		E) recovery well cycling sample
↓	917	12.35	4.0	6.62	19.4	3550	0.9	-181.3	7.1	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	920	MW-126A	12.35	6.62	19.4	3550	0.9	-181.3	7.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-126B
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: GOS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1552	NA	12.09	0.0	51.45	48.4	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/27/17	935	NA	12.21	0.0	45 SOFT	BOTTOM						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	940	12.38	0.5	7.05	19.8	4220	4.2	-24.4	14.7	colorless / clear	*Low-flow groundwater sample:*
	943	12.39	1.0	6.87	19.1	4240	1.5	-7.3	12.3		(A) peristaltic pump w/ ded tubing
	945	12.39	1.5	6.74	18.9	4230	0.9	-2.1	11.0		B) ded bladder pump
	947	12.39	2.0	6.69	18.7	4230	0.9	2.9	9.8		C) non-ded bladder pump; or
	950	12.39	2.5	6.67	18.6	4240	0.8	5.5	9.2		*Standard groundwater sample:*
	953	12.39	3.0	6.64	18.9	4230	0.8	7.8	8.4		D) bailer due to limited column; or
	955	12.39	3.5	6.63	18.9	4240	0.7	11.9	8.4		E) recovery well cycling sample
	957	12.39	4.0	6.64	18.9	4240	0.7	12.5	8.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1000	MW-126B	12.39	6.64	18.9	4240	0.7	12.5	8.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-127
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1541	NA	17.43	0.0	53.21	38.4	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/27/17	1025	NA	17.51									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1030	17.55	0.5	6.97	21.8	3030	3.9	-241.9	79.1	colorless / sl. cloudy	*Low-flow groundwater sample:*
	1033	17.55	1.0	6.85	21.0	2940	1.2	-256.9	81.1	↓ ↓	(A) peristaltic pump w/ ded tubing
	1035	17.55	1.5	6.81	20.8	2890	1.0	-264.4	73.0	↓ ↓	B) ded bladder pump
	1037	17.55	2.0	6.78	20.5	2880	1.0	-270.7	19.9	colorless / clear	C) non-ded bladder pump; or
	1040	17.55	2.5	6.80	20.5	2860	0.9	-272.1	11.8	↓ ↓	*Standard groundwater sample:*
	1043	17.55	3.0	6.76	20.6	2850	0.8	-274.1	7.0	↓ ↓	D) bailer due to limited column; or
	1045	17.55	3.5	6.75	20.6	2840	0.8	-275.6	5.7	↓ ↓	E) recovery well cycling sample
↓	1047	17.55	4.0	6.75	20.6	2830	0.8	-276.1	5.0	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1050	MW-127	17.55	6.75	20.6	2830	0.8	-276.1	5.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45~~-u
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-129
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1525	NP	20.80	0.0	53.08	38.2	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/27/17	1110	* CONFIRMED NP	20.80									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1115	20.84	0.5	7.09	23.8	2310	2.4	-192.6	97.0	Colorless / cloudy	*Low-flow groundwater sample:*
↓	1117	20.85	1.0	6.88	23.0	2300	2.0	-197.8	69.9	↓ ↓	(A) peristaltic pump w/ ded tubing
	1120	20.85	1.5	6.77	22.6	2270	1.8	-203.7	30.1	colorless / clear	B) ded bladder pump
	1123	20.85	2.0	6.73	22.5	2270	1.6	-204.9	23.4		C) non-ded bladder pump; or
	1125	20.85	2.5	6.73	22.5	2270	1.5	-205.0	11.0		*Standard groundwater sample:*
	1127	20.85	3.0	6.73	22.5	2270	1.5	-205.5	8.6		D) bailer due to limited column; or
	1130	20.85	3.5	6.71	22.5	2270	1.4	-206.1	7.3		E) recovery well cycling sample
↓	1133	20.85	4.0	6.70	22.5	2270	1.4	-206.5	6.8	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1140	MW-129	20.85	6.70	22.5	2270	1.4	-206.5	6.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#18A
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1210	NA	10.09	0.0	17.78	12.7	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1215	10.10	0.5	7.77	20.6	4460	3.7	93.8	2.4	colorless / clear	*Low-flow groundwater sample:*
↓	1217	10.10	1.0	7.55	19.5	4450	2.5	96.2	2.0	↓ ↓	(A) peristaltic pump w/ ded tubing
	1220	10.10	1.5	7.38	19.0	4440	2.1	95.5	1.8		B) ded bladder pump
	1223	10.10	2.0	7.25	18.8	4420	2.0	95.3	1.8		C) non-ded bladder pump; or
	1225	10.10	2.5	7.18	18.8	4400	2.0	95.1	1.5		*Standard groundwater sample:*
	1227	10.10	3.0	7.13	18.7	4410	2.0	94.9	1.3		D) bailer due to limited column; or
	1230	10.10	3.5	7.09	18.8	4400	2.1	95.6	1.2		E) recovery well cycling sample
↓	1233	10.10	4.0	7.08	18.7	4400	2.0	95.2	0.9	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1235	RW-#18A	10.10	7.08	18.7	4400	2.0	95.2	0.9	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 1A
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1045	NA	12.20	0.0	33.50	25.8	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1055	12.21	0.5	7.58	21.2	5240	3.3	49.4	4.6	Colorless | clear	*Low-flow groundwater sample:*
	1057	12.21	1.0	7.20	20.0	5370	1.5	48.5	5.2		(A) peristaltic pump w/ ded tubing
	1100	12.21	1.5	7.06	19.8	5380	1.3	49.5	5.0		B) ded bladder pump
	1103	12.21	2.0	6.89	19.6	5400	1.0	58.6	4.7		C) non-ded bladder pump; or
	1105	12.21	2.5	6.81	19.7	5390	0.9	54.2	4.3		*Standard groundwater sample:*
	1107	12.21	3.0	6.76	19.6	5390	0.9	60.6	4.1		D) bailer due to limited column; or
	1110	12.21	3.5	6.73	19.6	5400	0.9	58.9	4.4		E) recovery well cycling sample
	1113	12.21	4.0	6.71	19.7	5390	0.8	57.3	4.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1115	KWB-1A	12.21	6.71	19.7	5390	0.8	57.3	4.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-1B (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1048	NA	13.85	0.0	33.92	Not Sampled	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB- 1C
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1050	NA	14.42	0.0	52.71	42.7	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1130	14.45	0.5	7.18	21.5	5410	3.9	86.4	4.9	colorless / clear	*Low-flow groundwater sample:*
	1133	14.45	1.0	7.04	20.8	5390	2.3	87.0	2.2		(A) peristaltic pump w/ ded tubing
	1135	14.45	1.5	6.93	20.5	5380	2.0	86.8	1.4		B) ded bladder pump
	1137	14.45	2.0	6.82	20.1	5370	1.8	86.3	1.2		C) non-ded bladder pump; or
	1140	14.45	2.5	6.78	20.0	5360	1.7	85.4	1.5		*Standard groundwater sample:*
	1143	14.45	3.0	6.80	19.9	5370	1.7	86.1	1.2		D) bailer due to limited column; or
	1145	14.45	3.5	6.74	19.8	5370	1.6	88.8	1.2		E) recovery well cycling sample
	1147	14.45	4.0	6.73	19.7	5370	1.6	90.1	1.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1150	KWB-1C	14.45	6.73	19.7	5370	1.6	90.1	1.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* Located ~25' N of original KWB-10 well pad

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-10R
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1005	NA	15.31	0.00	29.46	22.0	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's
		*										

* CONFIRMED NO Measurable LNAPL

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1010	15.42	0.5	6.88	21.0	1970	3.0	-145.4	6.1	colorless / clear / odor	*Low-flow groundwater sample:*
↓	1013	15.45	1.0	6.71	20.7	1944	1.3	-156.2	8.0	↓	(A) peristaltic pump w/ ded tubing
	1015	15.45	1.5	6.63	20.7	1947	1.0	-152.0	9.7		B) ded bladder pump
	1017	15.45	2.0	6.61	20.7	1911	1.0	-149.1	9.0		C) non-ded bladder pump; or
	1020	15.45	2.5	6.60	20.6	1908	1.0	-150.2	8.2		*Standard groundwater sample:*
	1023	15.45	3.0	6.59	20.6	1904	0.9	-159.1	7.3		D) bailer due to limited column; or
	1025	15.45	3.5	6.59	20.7	1899	0.9	-161.9	6.8		E) recovery well cycling sample
↓	1027	15.45	4.0	6.60	20.6	1897	0.9	-163.2	6.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1030	KWB-10R	15.45	6.60	20.6	1897	0.9	-163.2	6.2	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-131
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: GDS/BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1533	NA	22.00	0.0	53.35	38.1	Yes	Yes	Yes	Yes		Weather: Sunny, 70
4/27/17	1045	NA	21.94	0.0	53.35							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1050	21.95	0.5	7.18	23.8	1969	2.4	-200.5	39.7	sl. cloudy	*Low-flow groundwater sample:*
	1053	21.95	1.0	7.04	23.2	1978	1.3	-206.3	26.1	↓	(A) peristaltic pump w/ ded tubing
	1055	21.95	1.5	6.95	23.0	1985	0.9	-209.6	16.4	clear	B) ded bladder pump
	1058	21.95	2.0	6.88	22.9	1994	0.8	-211.7	10.8		C) non-ded bladder pump; or
	1100	21.95	2.5	6.84	22.9	1999	0.7	-214.6	8.7		*Standard groundwater sample:*
	1103	21.95	3.0	6.81	22.8	2003	0.7	-216.3	8.2		D) bailer due to limited column; or
	1105	21.95	3.5	6.79	22.8	2006	0.6	-217.5	7.9		E) recovery well cycling sample
↓	1108	21.95	4.0	6.78	22.7	2008	0.6	-218.1	7.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1110	MW-131	21.95	6.78	22.7	2008	0.6	-218.1	7.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-5
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1518	NA	22.28	0.0	37.68	30.7	Yes	Yes	Yes	Yes		Weather: Sunny, 70's
4/26/17	1610	NA	22.36									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1615	22.41	0.5	6.92	22.2	2920	4.1	-129.1	5.6	colorless / clear	*Low-flow groundwater sample:*
	1617	22.42	1.0	6.78	21.7	2940	3.1	-137.1	5.0		(A) peristaltic pump w/ ded tubing
	1620	22.42	1.5	6.72	21.7	2930	2.8	-139.9	4.4		B) ded bladder pump
	1623	22.42	2.0	6.67	21.4	2940	2.5	-146.3	4.0		C) non-ded bladder pump; or
	1625	22.42	2.5	6.63	21.3	2940	2.4	-148.8	3.7		*Standard groundwater sample:*
	1627	22.42	3.0	6.62	21.2	2940	2.4	-150.2	3.2		D) bailer due to limited column; or
	1630	22.42	3.5	6.61	21.1	2940	2.4	-147.1	3.5		E) recovery well cycling sample
	1633	22.42	4.0	6.61	21.1	2940	2.3	-146.0	3.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1640	KWB-5	22.42	6.61	21.1	2940	2.3	-146.0	3.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW - 111
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GPS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1512	NA	23.40	0.0	40.83	35.8	Yes	Yes	Yes	Yes		Weather: Sunny, 70's
4/26/17	1505	NA	23.50									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1510	23.59	0.5	7.07	21.9	2930	3.7	-169.9	61.0	colorless / sl. cloudy	*Low-flow groundwater sample:*
	1513	23.59	1.0	6.94	21.7	2940	2.9	-166.2	54.0	↓ ↓	(A) peristaltic pump w/ ded tubing
	1515	23.59	1.5	6.77	21.3	2950	2.4	-156.0	47.3	↓ ↓	B) ded bladder pump
	1517	23.59	2.0	6.71	21.0	2960	2.2	-145.7	25.6	colorless / clear	C) non-ded bladder pump; or
	1520	23.59	2.5	6.68	20.9	2960	2.1	-132.8	18.7	↓ ↓	*Standard groundwater sample:*
	1523	23.59	3.0	6.63	21.0	2980	2.1	-119.1	12.2	↓ ↓	D) bailer due to limited column; or
	1525	23.59	3.5	6.62	21.1	2980	2.0	-106.9	9.8	↓ ↓	E) recovery well cycling sample
↓	1527	23.59	4.0	6.62	21.0	2980	2.0	-101.1	8.4	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1535	MW-111	23.59	6.62	21.0	2980	2.0	-101.1	8.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Oil-absorbant sock in 1416
No sock in 2416

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-6
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: AOS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1458	NA	21.02	0.0	36.44	27.4	Yes	Yes	Yes	Yes		Weather: partly cloudy, 70's
4/26/17	1410	NA	21.06									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1415	21.11	0.5	6.98	21.7	2650	2.9	-233.3	7.6	dark tint / clear / odor	Low-flow groundwater sample:
	1417	21.11	1.0	6.90	21.2	2550	1.5	-244.6	5.2		(A) peristaltic pump w/ ded tubing
	1420	21.11	1.5	6.91	20.7	2480	1.2	-257.7	3.5		B) ded bladder pump
	1423	21.11	2.0	6.84	20.5	2440	1.0	-264.2	3.0		C) non-ded bladder pump; or
	1425	21.11	2.5	6.84	20.3	2420	1.1	-268.5	4.0		Standard groundwater sample:
	1427	21.11	3.0	6.83	20.3	2410	1.0	-272.7	3.6		D) bailer due to limited column; or
	1430	21.11	3.5	6.81	20.2	2400	1.0	-274.1	3.2		E) recovery well cycling sample
	1433	21.11	4.0	6.81	20.2	2400	0.9	-275.6	2.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1435	KWB-6	21.11	6.81	20.2	2400	0.9	-275.6	2.8	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	N.Cat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-112
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1504	20.05	20.37	0.32	37.54	32.5	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not Sampled due to well						B) ded bladder pump
			2.0		having LNAPL thickness						C) non-ded bladder pump; or
			2.5		≥ 0.03 ft.						*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-112								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-132
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1450	18.58	18.84	0.26	42.66	NA	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0		Not sampled due to well having LNAPL thickness ≥ 0.03 ft.						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-132								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	~~300~~
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

*Located inside yellow vault; Furthest South

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-57
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1435	NA	19.91	0.0	34.32	32.8	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/26/17	1320	NA	19.99									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1325	20.13	0.5	7.12	20.9	4970	4.1	101.2	57.2	Colorless / sl. Cloudy	*Low-flow groundwater sample:*
	1327	20.19	1.0	6.95	20.0	5010	2.1	105.0	39.8	↓ ↓	(A) peristaltic pump w/ ded tubing
	1330	20.24	1.5	6.83	19.3	5050	1.4	107.3	26.1	Colorless / clear	B) ded bladder pump
	1333	20.27	2.0	6.78	19.2	5060	1.2	107.7	20.2		C) non-ded bladder pump; or
	1335	20.29	2.5	6.75	19.0	5060	1.0	107.2	17.9		*Standard groundwater sample:*
	1338	20.31	3.0	6.72	19.2	5050	1.0	106.2	16.0		D) bailer due to limited column; or
	1340	20.32	3.5	6.71	19.2	5040	1.0	104.2	15.1		E) recovery well cycling sample
↓	1343	20.33	4.0	6.71	19.2	5040	1.0	103.6	14.6	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1345	MW-57	20.33	6.71	19.2	5040	1.0	103.6	14.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

~32" corrugated stickup

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW - # 11-0
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1442	NA	22.08	0-0	22.20	NA	Yes	Yes	Yes	Yes		Weather: Partly cloudy, 80's
			↓									

↳ May reflect minimal water trapped in well sump/cap to well bottom

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0		Not Sampled due to		Insufficient				C) non-ded bladder pump; or
			2.5			Water	Column				*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* Until further notice, do not address well in any way, per Navajo, 4-26-16

Jack Joy - Farmer

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-9
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0	[Historically obstructed @ 15.11 ft-TOC]							(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0	DO NOT ADDRESS							D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		KWB-9								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO_3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO_3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

~~Trip Blank~~ Rest-02 (Submitted on 4/26/17)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-12A
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GRS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	935	NA	22.71	0.0	25.03	24.9	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/26/17	1145	NA	22.71									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1150	22.80	0.5	7.27	20.4	3800	4.7	92.6	30.1	colorless / clear	*Low-flow groundwater sample:*
	1153	22.82	1.0	7.07	19.7	3790	3.3	93.8	18.2		(A) peristaltic pump w/ ded tubing
	1155	22.85	1.5	6.94	19.1	3790	3.4	96.0	9.5		B) ded bladder pump
	1157	22.86	2.0	6.88	18.9	3790	3.5	97.3	5.0		C) non-ded bladder pump; or
	1200	22.87	2.5	6.84	18.8	3780	3.4	98.6	2.7		*Standard groundwater sample:*
	1203	22.88	3.0	6.82	18.9	3780	3.4	99.1	2.0		D) bailer due to limited column; or
	1205	22.89	3.5	6.80	19.0	3770	3.5	100.0	1.6		E) recovery well cycling sample
↓	1207	22.90	4.0	6.79	18.9	3770	3.5	101.1	1.9	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1210	KWB-12A	22.90	6.79	18.9	3770	3.5	101.1	1.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[* HMI - dedicated bladder pump]

Monitoring Well Purging and Sampling Record

+ DUP - Rest - 05
+ EB - Rest - 05
(both for same analysis)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 12 B
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in ; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GPS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4/25/17	939	NA	22.52	0.0	39.39	35.2	Yes	Yes	Yes	Yes		Weather: Sunny, 60's
4/26/17	1225	NA	22.52									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1230	22.52	0.5	7.18	20.2	3750	4.8	-90.2	2.7	colorless / clear	*Low-flow groundwater sample:*
↓	1233	22.52	1.0	7.02	19.2	3750	4.6	-44.9	2.0	↓	A) peristaltic pump w/ ded tubing
	1235	22.52	1.5	6.96	18.5	3820	4.5	-1.8	1.4		(B) ded bladder pump
	1237	22.52	2.0	6.91	18.7	3850	4.5	39.3	1.1		C) non-ded bladder pump; or
	1240	22.52	2.5	6.87	18.7	3860	4.4	63.4	0.9		*Standard groundwater sample:*
	1243	22.52	3.0	6.85	18.6	3870	4.4	73.5	0.9		D) bailer due to limited column; or
	1245	22.52	3.5	6.84	18.6	3870	4.3	77.0	1.0		E) recovery well cycling sample
↓	1247	22.52	4.0	6.84	18.6	3870	4.3	80.8	0.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/26/17	1250	KWB-12B	22.52	6.84	18.6	3870	4.3	80.8	0.8	DRO	HCL	Lab: ESC Lab Sciences, Mt. Juliet, TN 8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
	800	Dup-Rest-05	22.52	6.84	18.6	3870	4.3	80.8	0.8	Same as above	same	Same
↓	1305	EB-Rest-05	NA	→	→	→	→	→	→	Same as above	same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 2R
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1650	NA	21.13	0.0	39.41	32.4	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1655	21.50	0.5	7.11	22.3	3140	3.1	-214.0	7.2	Colorless / clear / odor	*Low-flow groundwater sample:*
	1657	21.51	1.0	7.01	21.7	3160	2.4	-213.3	5.0		(A) peristaltic pump w/ ded tubing
	1700	21.52	1.5	6.93	21.3	3180	1.8	-211.0	2.3		B) ded bladder pump
	1703	21.52	2.0	6.93	21.1	3190	1.6	-208.8	1.5		C) non-ded bladder pump; or
	1705	21.52	2.5	6.90	21.0	3200	1.6	-206.5	1.0		*Standard groundwater sample:*
	1707	21.52	3.0	6.89	21.0	3210	1.6	-204.9	1.2		D) bailer due to limited column; or
	1710	21.52	3.5	6.86	21.0	3210	1.7	-203.7	1.1		E) recovery well cycling sample
↓	1713	21.52	4.0	6.85	21.0	3220	1.6	-202.7	1.1	↓ ↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1715	KWB-2R	21.52	6.85	21.0	3220	1.6	-202.7	1.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-58
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1605	NA	20.12	0.0	33.06	25.6	Yes	Yes	Yes	Yes		Weather: Cloudy, 80's
		↓ No LNAPL/sheen confirmed										

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1610	20.20	0.5	7.03	21.9	2680	2.9	-195.4	9.6	Colorless/clear/odor	*Low-flow groundwater sample:*
↓	1613	20.21	1.0	6.96	21.0	2530	2.5	-203.3	10.0	↓	(A) peristaltic pump w/ ded tubing
↓	1615	20.21	1.5	6.90	20.7	2450	1.9	-210.7	9.6	↓	B) ded bladder pump
↓	1617	20.21	2.0	6.86	20.5	2390	1.8	-220.5	9.2	↓	C) non-ded bladder pump; or
↓	1620	20.21	2.5	6.86	20.6	2370	1.8	-225.5	8.9	↓	*Standard groundwater sample:*
↓	1623	20.21	3.0	6.83	20.6	2350	1.7	-230.8	8.8	↓	D) bailer due to limited column; or
↓	1625	20.21	3.5	6.84	20.6	2340	1.7	-240.1	8.4	↓	E) recovery well cycling sample
↓	1627	20.21	4.0	6.82	20.6	2340	1.6	-246.0	8.0	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1630	MW-58	20.21	6.82	20.6	2340	1.6	-246.0	8.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[* HMI dedicated bladder pump]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 13
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (cross-gradient) (2-in; at-grade) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	905	NA	24.51	0.0	33.10	30.1	Yes	Yes	Yes	Yes		Weather: SUNNY, 60's
4/26/17	1055	NA	24.52									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1100	24.53	0.5	7.31	18.5	4040	5.0	99.4	62.2	colorless / sl. cloudy	*Low-flow groundwater sample:*
	1103	24.55	1.0	7.18	18.6	4020	4.2	99.4	140.2	colorless / cloudy	A) peristaltic pump w/ ded tubing
	1105	24.55	1.5	7.11	18.6	4020	3.9	100.0	193.4		(B) ded bladder pump
	1107	24.55	2.0	6.99	18.1	4000	3.8	101.1	>200		C) non-ded bladder pump; or
	1110	24.55	2.5	6.96	18.0	4000	3.8	101.2	>200		*Standard groundwater sample:*
	1113	24.55	3.0	6.93	17.9	3990	3.7	102.1	>200		D) bailer due to limited column; or
	1115	24.55	3.5	6.91	18.0	3980	3.7	102.6	>200		E) recovery well cycling sample
	1117	24.55	4.0	6.89	18.0	3980	3.7	102.9	>200		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1120	KWB-13	24.55	6.89	18.0	3980	3.7	102.9	>200	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-103
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1420	NP	17.10	0.0	25.22	22.2	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1425	17.22	0.5	7.39	32.3	31,700	2.3	-310.3	4.4	colorless, clear	*Low-flow groundwater sample:*
↓	1427	17.28	1.0	7.38	32.1	32,200	2.1	-314.3	4.3	↓	(A) peristaltic pump w/ ded tubing
	1430	17.34	1.5	7.38	31.9	32,600	1.9	-318.6	4.2		B) ded bladder pump
	1432	17.38	2.0	7.39	31.7	33,100	1.9	-324.0	4.1		C) non-ded bladder pump; or
	1435	17.41	2.5	7.39	31.6	33,300	1.8	-328.1	3.9		*Standard groundwater sample:*
	1437	17.44	3.0	7.39	31.6	33,300	1.9	-328.6	3.9		D) bailer due to limited column; or
	1440	17.47	3.5	7.39	31.6	33,300	1.9	-328.9	3.8		E) recovery well cycling sample
↓	1442	17.50	4.0	7.39	31.6	33,300	1.9	-329.1	3.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1445	MW-103	17.50	7.39	31.6	33,300	1.9	-329.1	3.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Dup-Rest-02 (Same analyses)
EB-Rest-02 (Same analyses)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-104
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: SCM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1510	NP	16.48	0.0	21.97	19.0	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1515	16.62	0.5	7.16	26.5	3930	1.6	-326.3	3.6	colorless; clear	*Low-flow groundwater sample:*
	1517	16.68	1.0	7.14	26.1	3250	1.5	-328.9	3.6		(A) peristaltic pump w/ ded tubing
	1520	16.74	1.5	7.12	25.6	2460	1.4	-330.5	3.7		B) ded bladder pump
	1522	16.79	2.0	7.12	25.2	2110	1.4	-330.6	3.8		C) non-ded bladder pump; or
	1525	16.84	2.5	7.12	24.9	1940	1.4	-330.3	3.6		*Standard groundwater sample:*
	1527	16.87	3.0	7.13	24.7	1850	1.4	-329.7	3.4		D) bailer due to limited column; or
	1530	16.90	3.5	7.13	24.5	1770	1.4	-329.6	3.4		E) recovery well cycling sample
	1532	16.93	4.0	7.14	24.5	1750	1.5	-329.2	3.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1535	MW-104	16.93	7.14	24.5	1750	1.5	-329.2	3.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~HNO3~~	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
	1200	Dup-Rest-02	16.93	7.14	24.5	1750	1.5	-329.2	3.3	same as above	same	same
	1550	EB-Rest-02	NA							same as above	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged tube to stretch outside of berm

Monitoring Well Purging and Sampling Record

Absorbent sock in well ZH16
Absorbent sock in well 1H17 (started)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-64
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: SCH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1235	NP	18.50	0.0	34.08	26.6	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

* Needed to stretch tube over berm.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	* T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1240	18.70	0.5	7.27	32.2	2520	2.2	-290.9	3.8	colorless/clear	*Low-flow groundwater sample:*
↓	1242	18.79	1.0	7.25	31.8	2530	1.7	-309.2	3.8	↓	(A) peristaltic pump w/ ded tubing
	1245	18.83	1.5	7.25	31.6	2540	1.6	-313.9	3.8		B) ded bladder pump
	1247	18.85	2.0	7.25	31.5	2540	1.5	-317.5	3.8		C) non-ded bladder pump; or
	1250	18.86	2.5	7.24	31.3	2540	1.5	-320.1	3.8		*Standard groundwater sample:*
	1252	18.87	3.0	7.24	31.0	2540	1.5	-322.9	2.7		D) bailer due to limited column; or
	1255	18.88	3.5	7.25	30.6	2540	1.5	-324.8	3.7		E) recovery well cycling sample
↓	1257	18.89	4.0	7.24	30.6	2540	1.4	-325.3	3.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1300	MW-64	18.89	7.24	30.6	2540	1.4	-325.3	3.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged tube [Located in front of storage shed]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-65
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1325	NP	14.32	0.0	28.78	23.8	Yes	Yes	Yes	Yes		Weather: mostly clear, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1330	14.34	0.5	7.14	28.4	2130	2.0	-212.8	12.1	colorless/clear / odor	Low-flow groundwater sample:
|	1332	14.35	1.0	7.11	28.2	2130	2.1	-216.1	10.1	|	(A) peristaltic pump w/ ded tubing
|	1335	14.36	1.5	7.09	27.9	2140	1.9	-218.3	9.1	|	B) ded bladder pump
|	1337	14.36	2.0	7.08	27.7	2140	1.8	-220.8	8.6	|	C) non-ded bladder pump; or
|	1340	14.36	2.5	7.07	27.6	2130	1.6	-224.5	8.4	|	Standard groundwater sample:
|	1342	14.36	3.0	7.06	27.4	2130	1.6	-226.0	7.9	|	D) bailer due to limited column; or
|	1345	14.36	3.5	7.06	27.4	2136	1.6	-227.5	7.6	|	E) recovery well cycling sample
↓	1347	14.36	4.0	7.06	27.3	2120	1.5	-227.7	7.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1350	MW-65	14.36	7.06	27.3	2120	1.5	-227.7	7.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[gauge to top of guide pipe]

Well: RW-5R
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Active RW; above-grade vault; sampled by pump when sampled. Initials: SLG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1700	14.72	14.85	0.13	NM (pumps in well)	24.0	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s

Formerly reported TD = 35.30 ft-TOC

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	NO							B) ded bladder pump
			2.0	SAMPLE							C) non-ded bladder pump; or
			2.5	DUE							*Standard groundwater sample:*
			3.0	TO							D) bailer due to limited column; or
			3.5	PRESENCE							(E) recovery well cycling sample
			4.0								F) irrigation well grab sample
								OF			
									LNAPL		

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-102
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCY

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1635	NP	13.95	0.0	26.45	21.3	Yes	Yes	Yes	Yes		Weather: pt cloudy, 90s
4/26/17	900	NP	14.25	0.0								clear, 60s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	905	14.28	0.5	7.12	22.6	2100	2.2	-294.9	8.4	colorless; clear	*Low-flow groundwater sample:*
|	907	14.28	1.0	7.10	22.5	2120	1.8	-304.1	7.2	|	(A) peristaltic pump w/ ded tubing
|	910	14.28	1.5	7.09	22.5	2140	1.7	-310.2	7.1	|	B) ded bladder pump
|	912	14.28	2.0	7.09	22.5	2160	1.6	-315.8	6.7	|	C) non-ded bladder pump; or
|	915	14.28	2.5	7.08	22.6	2170	1.6	-317.8	6.5	|	*Standard groundwater sample:*
|	917	14.28	3.0	7.08	22.6	2170	1.6	-318.8	6.4	|	D) bailer due to limited column; or
|	920	14.28	3.5	7.07	22.7	2180	1.6	-320.1	6.3	|	E) recovery well cycling sample
V	922	14.28	4.0	7.07	22.7	2180	1.6	-320.6	6.3	V	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	925	MW-102	14.28	7.07	22.7	2180	1.6	-320.6	6.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged Tubing

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge / Sample through labeled guide-pipe

Well: RW-4
Event: Spring 2017 (Biennial)
Area of Concern: Rest
(Active RW in covered doghouse)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCU

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1625	NP	12.48	0.0	36.62	31.6	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s
4/26/17	1246	NP	12.62	0.0								clear, 70s

Well Purging Record * Drawdown not meas; narrow diam guide-tube

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1250	NM *	0.5	7.15	24.8	2250	2.0	-315.0	7.7	colorless; clear	*Low-flow groundwater sample:*
	1252		1.0	7.13	24.5	2240	1.6	-316.3	5.9		(A) peristaltic pump w/ ded tubing
	1255		1.5	7.14	24.6	2230	1.4	-317.9	5.5		B) ded bladder pump
	1257		2.0	7.16	24.5	2220	1.3	-319.3	5.2		C) non-ded bladder pump; or
	1300		2.5	7.19	24.4	2210	1.2	-319.6	4.9		*Standard groundwater sample:*
	1302		3.0	7.21	24.4	2210	1.1	-319.5	4.7		D) bailer due to limited column; or
	1305		3.5	7.24	24.3	2200	1.1	-319.1	4.6		E) recovery well cycling sample
	1307		4.0	7.25	24.3	2190	1.1	-318.8	4.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1310	RW-4	NM *	7.25	24.3	2190	1.1	-318.8	4.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged Tubing

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge / Sample through labeled garden-pipe

Well: RW-6
Event: Spring 2017 (Biennial)
Area of Concern: Rest
(Active RW in covered doghouse)

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials: SCY

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1650	13.55	13.62	0.07	34.90	30.0	Yes	Yes	Yes	Yes		Weather: pt cloudy, 90s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		NO SAMPLING DUE TO PRESENCE OF LNAPL						B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-6								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Position marked on adjacent fence; ~4' N. of fence; tendency to be covered by silt/gravel]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-99
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-hr; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCU

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1715	NP	16.02	0.0	27.80	22.8	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s
4/26/17	955	NP	16.34	0.0								clear, 60's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1000	16.42	0.5	6.99	22.4	2010	1.8	-308.7	10.4	colorless; clear	*Low-flow groundwater sample:*
"	1002	16.44	1.0	6.98	22.4	2020	1.5	-312.1	8.9		(A) peristaltic pump w/ ded tubing
"	1005	16.45	1.5	6.97	22.5	2020	1.3	-313.8	8.4		B) ded bladder pump
"	1007	16.46	2.0	6.96	22.5	2030	1.3	-314.7	7.5		C) non-ded bladder pump; or
"	1010	16.46	2.5	6.96	22.5	2030	1.3	-315.5	7.4		*Standard groundwater sample:*
"	1012	16.46	3.0	6.96	22.5	2040	1.3	-316.2	7.3		D) bailer due to limited column; or
"	1015	16.46	3.5	6.96	22.6	2040	1.3	-316.8	7.1		E) recovery well cycling sample
"	1017	16.46	4.0	6.96	22.6	2040	1.3	-317.3	7.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1020	MW-99	16.46	6.96	22.6	2040	1.3	-317.3	7.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-66
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1720	NP	15.00	0.0	29.80	24.6	Yes	Yes	Yes	Yes	(cracked pad)	Weather: pt cloudy 90s
4/26/17	1050	NP	15.19	0.0								clear, 60s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1055	15.34	0.5	7.31	22.9	1549	2.6	-226.1	6.3	colorless; clear	*Low-flow groundwater sample:*
	1057	15.40	1.0	7.29	22.7	1538	2.3	-225.1	5.1		(A) peristaltic pump w/ ded tubing
	1100	15.42	1.5	7.28	22.6	1534	2.2	-224.4	4.8		B) ded bladder pump
	1102	15.44	2.0	7.27	22.6	1523	2.1	-224.3	4.6		C) non-ded bladder pump; or
	1105	15.45	2.5	7.27	22.5	1511	2.1	-224.3	4.4		*Standard groundwater sample:*
	1107	15.45	3.0	7.26	22.4	1506	2.1	-224.6	4.4		D) bailer due to limited column; or
	1110	15.45	3.5	7.26	22.5	1504	2.1	-224.5	4.2		E) recovery well cycling sample
↓	1112	15.45	4.0	7.25	22.5	1504	2.1	-224.8	4.2	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1115	MW-66	15.45	7.25	22.5	1504	2.1	-224.8	4.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-28
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (6-in casing; stickup; PVC casing extends upward through a berm wall) Initials: SCG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection (6-in PVC (shattered at top w/ 0.65-ft slip collar over it)					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1530	NP	20.31	0.0	34.55	30.2	Yes	Issue	Issue	Yes		Weather: pt. cloudy, 90s
4/26/17	1145	NP	20.48	0.0								clear, 70s

No pad possible / unable to lock

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1150	20.53	0.5	6.87	23.9	2990	2.3	-319.3	6.5	colorless; clear	*Low-flow groundwater sample:*
|	1152	20.58	1.0	6.86	23.8	3050	2.0	~322.7	6.5	| |	(A) peristaltic pump w/ ded tubing
|	1155	20.62	1.5	6.86	23.7	3100	1.8	-325.4	6.4	| |	B) ded bladder pump
|	1157	20.64	2.0	6.86	23.6	3130	1.7	-327.4	5.6	| |	C) non-ded bladder pump; or
|	1200	20.68	2.5	6.86	23.4	3150	1.6	-329.8	5.4	| |	*Standard groundwater sample:*
|	1202	20.71	3.0	6.86	23.4	3160	1.5	-332.1	5.3	| |	D) bailer due to limited column; or
|	1205	20.73	3.5	6.86	23.5	3150	1.4	-333.4	5.1	| |	E) recovery well cycling sample
↓	1207	20.75	4.0	6.87	23.4	3150	1.4	-334.1	5.0	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1210	MW-28	20.75	6.87	23.4	3150	1.4	-334.1	5.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Stray 5-gal bucket w/ lid, labeled Chevron Hydraulic Oil sitting on Pad. Robert to address (4-26-17 per RC)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-59
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1740	NP	5.85	0.0	32.72	25.3	Yes	Yes	Yes	Yes	~2' fluid	Weather: pt. cloudy, 90s
4/27/17	900	NP	5.97	0.0							in a blue	pt: cloudy; 80s

Well Purging Record

5 gal bucket on pad; photographed and documented

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	(Likely Chevron Lube oil per bucket label)
4/27/17	905	5.95	0.5	6.97	24.7	2850	2.1	-193.9	4.6	colorless; clear	*Low-flow groundwater sample:*
	907	5.95	1.0	6.97	24.7	2900	2.1	-208.3	4.4		(A) peristaltic pump w/ ded tubing
	910	5.95	1.5	6.97	24.6	2960	1.9	-224.1	4.8		B) ded bladder pump
	912	5.95	2.0	6.97	24.6	3000	1.9	-236.7	5.0		C) non-ded bladder pump; or
	915	5.95	2.5	6.97	24.5	3020	1.8	-244.8	4.4		*Standard groundwater sample:*
	917	5.95	3.0	6.97	24.5	3030	1.8	-248.8	4.1		D) bailer due to limited column; or
	920	5.95	3.5	6.97	24.5	3030	1.9	-250.6	4.0		E) recovery well cycling sample
	922	5.95	4.0	6.97	24.5	3040	1.8	-252.4	4.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	925	MW-59	5.95	6.97	24.5	3040	1.8	-252.4	4.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ Dup-Rest-04
+ EB-Rest-04
(both for same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-60
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: SCM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1750	NP	7.11	0.0	37.78	26.7	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s
4/27/17	950	NP	7.19	0.0								pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	955	7.36	0.5	6.99	25.4	3390	2.1	-279.9	5.4	colorless; clear	*Low-flow groundwater sample:*
	957	7.42	1.0	6.99	24.9	3460	1.7	-293.9	4.6		(A) peristaltic pump w/ ded tubing
	1000	7.47	1.5	6.99	24.9	3470	1.6	-297.1	4.4		B) ded bladder pump
	1002	7.48	2.0	6.99	25.0	3480	1.5	-300.7	4.2		C) non-ded bladder pump; or
	1005	7.49	2.5	6.99	24.9	3490	1.5	-302.1	4.1		*Standard groundwater sample:*
	1007	7.49	3.0	6.99	24.9	3500	1.5	-304.3	3.9		D) bailer due to limited column; or
	1010	7.49	3.5	6.99	24.9	3510	1.5	-305.6	3.9		E) recovery well cycling sample
	1012	7.49	4.0	6.99	24.8	3510	1.4	-307.2	3.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1015	MW-60	7.49	6.99	24.8	3510	1.4	-307.2	3.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				~~N cont~~	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
	800	DUP-Rest-04		6.99	24.8	3510	1.4	-307.2	3.9	same as above	same as above	same
	1030	EB-Rest-04	NA							~~same as above~~	same as above	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-107
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in ; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1800	NP	9.91	0.0	19.05	17.1	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 905
4/26/17	1440	NP	10.10	0.0								clear, 805

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1450	10.27	0.5	7.14	23.9	1953	2.3	-93.8	6.2	colorless; clear	*Low-flow groundwater sample:*
↓	1452	10.35	1.0	7.13	23.6	1955	2.0	-96.7	4.9	↓ ↓	(A) peristaltic pump w/ ded tubing
	1455	10.38	1.5	7.12	23.5	1958	1.9	-98.7	4.7		B) ded bladder pump
	1457	10.41	2.0	7.12	23.3	1960	1.8	-101.6	4.6		C) non-ded bladder pump; or
	1500	10.43	2.5	7.12	23.1	1959	1.6	-104.7	4.6		*Standard groundwater sample:*
	1502	10.45	3.0	7.12	23.1	1958	1.6	-105.8	4.6		D) bailer due to limited column; or
	1505	10.47	3.5	7.11	23.0	1956	1.6	-107.0	4.5		E) recovery well cycling sample
↓	1507	10.49	4.0	7.11	23.0	1957	1.6	-107.6	4.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1510	MW-107	10.49	7.11	23.0	1957	1.6	-107.6	4.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-128
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Well area covered by gravel and soil, related to new construction (tank) in area (2-in; at-grade) Initials: SCH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1805					25.4	yes	yes	yes	yes	(Watch for ongoing burying by gravel)	Weather: pt. cloudy, 90s
4/26/17	1340	NP	12.96	0.0	35.35	25.4						clear, 80s

Well Purging Record Navajo (Domingo) located buried well (located 15' NE of NE corner of berm, it buried in future)

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1350	12.99	0.5	6.97	23.5	1990	2.0	-91.4	39.1	colorless, v. sl. cloudy	Low-flow groundwater sample:
↓	1352	12.99	1.0	6.94	23.3	1990	1.9	-86.2	32.6	↓	(A) peristaltic pump w/ ded tubing
	1355	12.99	1.5	6.92	23.0	1990	1.7	-74.9	23.6	clear	B) ded bladder pump
	1357	12.99	2.0	6.91	23.1	1990	1.7	-71.3	17.1	↓	C) non-ded bladder pump; or
	1400	12.99	2.5	6.90	23.1	1990	1.6	-67.8	15.9		Standard groundwater sample:
	1402	12.99	3.0	6.90	23.0	1990	1.6	-65.5	15.7		D) bailer due to limited column; or
	1405	12.99	3.5	6.90	23.0	1990	1.5	-64.4	13.1		E) recovery well cycling sample
↓	1407	12.99	4.0	6.90	23.0	1990	1.6	-63.2	12.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1410	MW-128	12.99	6.90	23.0	1990	1.6	-63.2	12.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-125
Event: Spring 2017 (Biennial)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SLH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1825	NP	6.48	0.0	28.31	23.5	Yes	Yes	Yes	Yes	Yes	Weather: pt. cloudy, 90s
4/26/17	1535	NP	6.61	0.0								clear, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1540	6.67	0.5	7.30	21.8	3870	2.5	52.8	8.5	colorless; clear	*Low-flow groundwater sample:*
	1542	6.67	1.0	7.14	21.4	4030	1.7	55.1	5.4		(A) peristaltic pump w/ ded tubing
	1545	6.67	1.5	7.11	21.3	4080	1.5	57.5	4.3		B) ded bladder pump
	1547	6.67	2.0	7.10	21.2	4100	1.4	60.6	4.1		C) non-ded bladder pump; or
	1550	6.67	2.5	7.09	21.1	4110	1.3	62.3	4.6		*Standard groundwater sample:*
	1552	6.67	3.0	7.09	21.1	4120	1.3	63.8	4.0		D) bailer due to limited column; or
	1555	6.67	3.5	7.09	21.1	4130	1.3	65.0	3.9		E) recovery well cycling sample
↓	1557	6.67	4.0	7.09	21.1	4130	1.3	65.3	3.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1600	MW-125	6.67	7.09	21.1	4130	1.3	65.3	3.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged Tubing Extension

Monitoring Well Purging and Sampling Record

✓ Trip Blank - Rest-03

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-116
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1830	NP	7.06	0.0	27.63	20.0	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s
4/26/17	1630	NP	7.02	0.0								clear, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1635	7.04	0.5	7.50	18.0	3470	2.7	45.4	10.3	colorless; clear	*Low-flow groundwater sample:*
	1637	7.04	1.0	7.37	17.1	3490	1.8	53.8	11.2		(A) peristaltic pump w/ ded tubing
	1640	7.04	1.5	7.33	16.8	3490	1.6	56.6	12.1		B) ded bladder pump
	1642	7.04	2.0	7.31	16.5	3490	1.5	59.1	13.2		C) non-ded bladder pump; or
	1645	7.04	2.5	7.29	16.3	3490	1.3	62.9	13.5		*Standard groundwater sample:*
	1647	7.04	3.0	7.28	16.0	3490	1.3	64.8	13.9		D) bailer due to limited column; or
	1650	7.04	3.5	7.27	15.8	3486	1.2	66.3	14.0		E) recovery well cycling sample
↓	1652	7.04	4.0	7.27	15.8	3480	1.2	67.0	14.0	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1655	MW-116	7.04	7.27	15.8	3480	1.2	67.0	14.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	New	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

N. side of dirt road; in-line w/ westernmost row of pecan trees; position labeled on adjacent fence pole (12' from fenceline)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-46R
Event: Spring 2017 (Biennial)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade)

Initials: SCC

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	18:35	NP	4.29	0.0	19.36	14.1	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 90s
4/27/17	1110	NP	4.43	0.0								pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1120	4.45	0.5	7.09	25.0	3800	2.4	31.4	1.4	clear; colorless	*Low-flow groundwater sample:*
	1122	4.45	1.0	7.05	24.6	3810	2.3	34.8	8.1		(A) peristaltic pump w/ ded tubing
	1125	4.45	1.5	7.04	24.5	3820	2.3	36.1	12.4		B) ded bladder pump
	1127	4.45	2.0	7.03	24.4	3820	2.4	37.8	16.0		C) non-ded bladder pump; or
	1130	4.45	2.5	7.02	24.4	3820	2.3	37.5	15.7		*Standard groundwater sample:*
	1132	4.45	3.0	7.02	24.3	3820	2.3	40.5	13.9		D) bailer due to limited column; or
	1135	4.45	3.5	7.02	24.2	3820	2.3	40.4	13.5		E) recovery well cycling sample
	1137	4.45	4.0	7.02	24.2	3820	2.3	40.8	13.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1140	MW-46R	4.45	7.02	24.2	3820	2.3	40.8	13.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

HMI - dedicated bladder pump

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-3R
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Upgradient) (4-in ; at-grade) Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	~~Depth~~ to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	915	NP	24.62	0.0	38.58	35.6	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	920	24.62	0.5	6.79	23.6	2410	5.4	175.3	4.3	colorless/clear	*Low-flow groundwater sample:*
	922	24.63	1.0	6.83	23.4	2400	5.3	174.6	4.2		A) peristaltic pump w/ ded tubing
	925	24.63	1.5	6.90	23.4	2380	5.1	174.8	4.2		(B) ded bladder pump
	927	24.64	2.0	6.93	23.4	2330	5.2	175.3	4.2		C) non-ded bladder pump; or
	930	24.64	2.5	6.95	23.3	2310	5.2	175.7	4.0		*Standard groundwater sample:*
	932	24.64	3.0	7.02	23.1	2290	5.0	175.7	3.8		D) bailer due to limited column; or
	935	24.64	3.5	7.04	23.1	2270	5.0	175.5	3.6		E) recovery well cycling sample
	937	24.64	4.0	7.05	23.2	2260	5.1	175.2	3.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	940	UG-3R	24.64	7.05	23.2	2260	5.1	175.2	3.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record (Near park)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-4
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade)

Initials: SCH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1060	NP	18.09	0.0	39.24	34.5	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 70s

Well Purging Record Screen: 19.5-39.5 ft-bgs

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1005	18.26	0.5	7.20	25.3	3560	4.1	168.7	29.1	colorless / clear	*Low-flow groundwater sample:*
	1007	18.27	1.0	7.11	24.6	3690	3.9	170.8	19.8		(A) peristaltic pump w/ ded tubing
	1010	18.28	1.5	7.07	24.4	3730	3.9	172.2	6.8		B) ded bladder pump
	1012	18.29	2.0	7.06	24.2	3750	3.9	173.0	5.1		C) non-ded bladder pump; or
	1015	18.30	2.5	7.05	24.1	3760	4.0	173.6	4.7		*Standard groundwater sample:*
	1017	18.30	3.0	7.04	24.1	3770	4.0	174.9	4.5		D) bailer due to limited column; or
	1020	18.31	3.5	7.03	24.1	3780	4.1	176.0	4.5		E) recovery well cycling sample
	1022	18.31	4.0	7.02	24.1	3770	4.1	176.4	4.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1025	UG-4	18.31	7.02	24.1	3770	4.1	176.4	4.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~Field filtered 0.45-u~~
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(just N. of elementary school)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-1
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Upgradient) (4-in; at-grade) Initials: SCN

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1055	NP	13.22	0.0	24.08	19.1	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1100	13.23	0.5	7.60	27.2	2940	5.5	150.6	4.6	colorless / clear	*Low-flow groundwater sample:*
"	1102	13.23	1.0	7.51	26.9	2950	5.4	154.8	4.2	"	(A) peristaltic pump w/ ded tubing
"	1105	13.23	1.5	7.43	26.3	2960	5.3	159.5	4.1	"	B) ded bladder pump
"	1107	13.23	2.0	7.38	26.1	2950	5.4	163.0	4.6	"	C) non-ded bladder pump; or
"	1110	13.23	2.5	7.38	26.1	2950	5.4	164.1	4.6	"	*Standard groundwater sample:*
"	1112	13.23	3.0	7.36	25.9	2940	5.4	166.1	3.9	"	D) bailer due to limited column; or
"	1115	13.23	3.5	7.35	25.9	2940	5.5	166.7	3.9	"	E) recovery well cycling sample
↓	1117	13.23	4.0	7.35	25.9	2940	5.5	167.3	3.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1120	UG-1	13.23	7.35	25.9	2940	5.5	167.3	3.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

E-W alley, immediately NW of Artesia Hotel

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-2
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Upgradient) (4-in; at-grade) Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1145	NP	17.42	0.0	29.28	24.3	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1150	17.50	0.5	7.58	26.5	2240	5.1	145.0	5.3	colorless/clear	*Low-flow groundwater sample:*
↓	1152	17.50	1.0	7.54	26.4	2240	4.9	147.3	5.0	↓	(A) peristaltic pump w/ ded tubing
	1155	17.51	1.5	7.51	26.1	2240	5.0	149.5	4.7		B) ded bladder pump
	1157	17.51	2.0	7.48	25.9	2230	4.9	151.9	4.5		C) non-ded bladder pump; or
	1200	17.52	2.5	7.47	25.9	2220	5.0	154.6	4.3		*Standard groundwater sample:*
	1202	17.52	3.0	7.46	25.6	2220	5.0	156.0	4.2		D) bailer due to limited column; or
	1205	17.52	3.5	7.46	25.7	2220	5.1	156.6	4.1		E) recovery well cycling sample
↓	1207	17.52	4.0	7.45	25.7	2220	5.0	156.7	4.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1210	UG-2	17.52	7.45	25.7	2220	5.0	156.7	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank - Rest - 04

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-101
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: TAB/SCD

Well Inspection Information

(4-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1510	NA	12.27	0.0	26.85	23.5	yes	yes	yes	yes		Weather: Cloudy/80s
4/27/17	920	NA	12.38	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	925	12.40	0.5	6.32	23.1	2480	1.9	-109.8	10.5	Clear / colorless	Low-flow groundwater sample:
	927	12.40	1.0	6.40	22.6	2260	1.6	-116.9	9.8		(A) peristaltic pump w/ ded tubing
	930	12.40	1.5	6.48	22.2	2190	1.4	-121.7	8.6		B) ded bladder pump
	932	12.40	2.0	6.51	22.1	2170	1.3	-123.5	7.9		C) non-ded bladder pump; or
	935	12.40	2.5	6.55	22.1	2140	1.3	-129.5	7.5		Standard groundwater sample:
	937	12.40	3.0	6.57	22.1	2120	1.2	-132.5	7.1		D) bailer due to limited column; or
	940	12.40	3.5	6.59	22.0	2110	1.2	-135.8	6.8		E) recovery well cycling sample
	942	12.40	4.0	6.60	22.0	2110	1.2	-137.1	6.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	945	MW-101	12.40	6.66	22.0	2110	1.2	-137.1	6.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-105
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1500	NP	8.60	0.0	17.20	14.2	yes	yes	yes	yes		Weather: PC/cloudy 80s
4/26/17	800	NP	8.78	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	805	8.83	0.5	8.13	20.1	1473	2.1	-360.7	23.6	Clear, odd, Black ppt	*Low-flow groundwater sample:*
	807	8.83	1.0	8.11	20.2	1419	1.5	-370.9	20.1		(A) peristaltic pump w/ ded tubing
	810	8.83	1.5	8.08	20.3	1400	1.4	-374.5	19.9		B) ded bladder pump
	813	8.83	2.0	7.98	20.3	1371	1.3	-378.2	17.3		C) non-ded bladder pump; or
	815	8.83	2.5	7.95	20.4	1365	1.2	-378.5	14.1		*Standard groundwater sample:*
	817	8.83	3.0	7.93	20.4	1360	1.2	-379.2	10.3		D) bailer due to limited column; or
	820	8.83	3.5	7.91	20.5	1359	1.1	-379.2	9.6		E) recovery well cycling sample
	823	8.83	4.0	7.89	20.5	1358	1.0	-379.3	8.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	825	MW-105	8.83	7.89	20.5	1358	1.0	-379.3	8.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged tube. [Inside doghouse]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[Gauge or Sample through labeled 1-in guide-pipe]

Well: RW-2
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1410	10.19	10.20	0.01	36.13	31.1	yes	yes	yes	yes		Weather: PT/Cloudy 80s
4/26/17	1250	10.39	10.41	0.02								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1255	N/M *	0.5	7.24	24.6	3220	1.2	-386.1	28.6	Clear, black particles	Low-flow groundwater sample:
	1257		1.0	7.20	24.3	3360	1.1	-385.0	9.9	Light sheen, odor	(A) peristaltic pump w/ ded tubing
	1300		1.5	7.18	24.1	3460	1.0	-388.4	7.4		B) ded bladder pump
	1303		2.0	7.18	24.0	3530	0.9	-389.7	6.1		C) non-ded bladder pump; or
	1305		2.5	7.18	23.9	3540	0.9	-389.9	5.0		Standard groundwater sample:
	1307		3.0	7.18	23.9	3560	0.9	-389.2	4.7		D) bailer due to limited column; or
	1310		3.5	7.17	24.0	3560	0.9	-388.2	4.4		E) recovery well cycling sample
↓	1313	↓	4.0	7.17	24.0	3570	0.8	-388.2	4.2	↓	F) irrigation well grab sample

Well Sampling Record * 1-in guide-pipe

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1315	RW-2	N/M	7.17	24.0	3570	0.8	-388.2	4.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-61
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1440	NP	10.03	0.0	29.30	24.30	yes	yes	yes	yes	6504/en	Weather: PT/Cloudy 80s
4/26/17	900	NP	10.28	0.0							PAD	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	905	10.46	0.5	7.61	22.7	2540	1.4	-356.9	13.8	clear	*Low-flow groundwater sample:*
	907	10.63	1.0	7.61	22.7	2480	1.1	-352.4	10.2		(A) peristaltic pump w/ ded tubing
	910	10.74	1.5	7.60	22.7	2530	1.1	-352.3	9.8		B) ded bladder pump
	913	10.82	2.0	7.59	22.8	2570	1.0	-353.6	8.4		C) non-ded bladder pump; or
	915	10.92	2.5	7.58	22.9	2610	1.0	-355.4	8.2	Reduced purge rate	*Standard groundwater sample:*
	920	11.02	3.0	7.58	22.9	2630	1.0	-356.7	8.0	to 0.1 L/min	D) bailer due to limited column; or
	925	11.12	3.5	7.57	22.9	2640	0.9	-356.2	7.9		E) recovery well cycling sample
	930	11.14	4.0	7.58	22.9	2650	0.9	-354.4	7.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	935	MW-61	11.14	7.58	22.9	2650	0.9	-354.4	7.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-62
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; at-grade)

Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1430	NP	10.84	0.0	19.50	21.3	yes	yes	yes	yes		Weather: pt/cloudy 80s
4/26/17	955	NP	10.88	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1000	11.04	0.5	7.45	23.0	3550	1.7	-373.2	12.7	Clear, colorless	*Low-flow groundwater sample:*
	1003	11.14	1.0	7.42	22.8	3560	1.5	-375.6	9.0		(A) peristaltic pump w/ ded tubing
	1005	11.21	1.5	7.40	22.6	3560	1.4	-377.0	6.8		B) ded bladder pump
	1007	11.26	2.0	7.39	22.5	3580	1.2	-377.8	6.2		C) non-ded bladder pump; or
	1010	11.30	2.5	7.38	22.3	3580	1.1	-379.3	3.7		*Standard groundwater sample:*
	1013	11.34	3.0	7.37	22.5	3580	1.0	-379.6	3.6		D) bailer due to limited column; or
	1015	11.37	3.5	7.36	22.4	3580	1.0	-380.0	3.5		E) recovery well cycling sample
	1017	11.41	4.0	7.35	22.4	3590	0.9	-380.2	3.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1020	MW-62	11.41	7.35	22.4	3590	0.9	-380.2	3.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-93
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1400	NP	5.83	0.0	20.23	15.9	yes	yes	yes	yes		Weather: PC/Cloudy 80s
4/26/17	1150	NP	6.10	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1155	6.21	0.5	8.09	22.3	2930	1.0	-354.7	10.6	Clear; colorless	*Low-flow groundwater sample:*
	1157	6.28	1.0	7.87	21.7	2930	0.8	-363.3	8.0		(A) peristaltic pump w/ ded tubing
	1200	6.36	1.5	7.53	21.4	2920	0.7	-369.0	7.5		B) ded bladder pump
	1203	6.40	2.0	7.29	21.3	2920	0.7	-371.1	5.3		C) non-ded bladder pump; or
	1205	6.43	2.5	7.26	21.2	2920	0.7	-371.9	4.3		*Standard groundwater sample:*
	1207	6.46	3.0	7.25	21.2	2910	0.6	-372.3	4.0		D) bailer due to limited column; or
	1210	6.49	3.5	7.23	21.1	2910	0.6	-372.7	3.9		E) recovery well cycling sample
↓	1213	6.52	4.0	7.22	21.1	2920	0.7	-373.2	3.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1215	MW-93	6.52	7.22	21.1	2920	0.7	-373.2	3.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-43
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(6-in; stickup)

Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1100	NP	7.03	0.0	19.67	16.5	yes	Issues*	yes	yes	No PAD	Weather: P/C/cloudy 70°

Well Purging Record

* (NO protective outer casing)

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1105	7.08	0.5	7.46	26.3	4510	1.6	-392.9	10.8	Clear with Black parti	Low-flow groundwater sample:
	1107	7.08	1.0	7.44	25.5	4550	1.5	-395.1	10.0		(A) peristaltic pump w/ ded tubing
	1110	7.08	1.5	7.44	24.3	4610	1.5	-397.1	9.3		B) ded bladder pump
	1113	7.08	2.0	7.43	24.2	4620	1.3	-397.9	8.7		C) non-ded bladder pump; or
	1115	7.08	2.5	7.42	24.2	4620	1.2	-398.6	8.0		Standard groundwater sample:
	1117	7.08	3.0	7.42	24.1	4610	1.1	-400.9	7.8		D) bailer due to limited column; or
	1120	7.08	3.5	7.41	24.0	4610	1.0	-400.7	7.5		E) recovery well cycling sample
	1123	7.08	4.0	7.41	24.0	4620	1.0	-400.6	7.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1125	MW-43	7.08	7.41	24.0	4620	1.0	-400.6	7.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45 u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-137
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1300	NP	5.04	0.0	29.60	24.6	yes	yes	yes	yes		Weather: PT/Cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1305	5.04	0.5	7.01	29.3	4380	1.1	-394.7	11.4	clear/odor	*Low-flow groundwater sample:*
	1307	5.04	1.0	7.04	28.0	4860	1.2	-400.9	10.3		(A) peristaltic pump w/ ded tubing
	1310	5.04	1.5	7.05	27.3	5130	1.3	-403.1	10.0		B) ded bladder pump
	1313	5.04	2.0	7.04	27.1	5190	1.5	-407.6	9.8		C) non-ded bladder pump; or
	1315	5.04	2.5	7.04	27.0	5240	1.6	-408.1	9.9		*Standard groundwater sample:*
	1317	5.04	3.0	7.04	26.9	5250	1.7	-408.1	7.0		D) bailer due to limited column; or
	1320	5.04	3.5	7.03	26.7	5260	1.7	-407.8	6.8		E) recovery well cycling sample
↓	1323	5.04	4.0	7.03	26.7	5270	1.7	-406.9	6.3	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1325	MW-137	5.04	7.03	26.7	5270	1.7	-406.9	6.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-138
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade)

Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1200	n/f	6.78	0.0	24.81	19.8	yes	yes	yes	yes		Weather: PC/cloudy/ 85°

Well Purging Record

Screen: 10-25 ft-bgs

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1205	6.81	0.5	7.19	32.0	3480	1.5	-369.5	25.7	clear with black particles	Low-flow groundwater sample:
	1207	6.81	1.0	7.10	31.8	3,350	1.4	-366.9	15.0		(A) peristaltic pump w/ ded tubing
	1210	6.81	1.5	7.08	31.4	3310	1.4	-366.0	13.9		B) ded bladder pump
	1213	6.81	2.0	7.04	31.2	3210	1.3	-363.8	10.0		C) non-ded bladder pump; or
	1215	6.81	2.5	7.04	31.0	3190	1.2	-363.1	9.6		Standard groundwater sample:
	1217	6.81	3.0	7.03	31.0	3180	1.1	-362.3	7.3		D) bailer due to limited column; or
	1220	6.81	3.5	7.02	30.9	3170	1.0	-362.2	6.5		E) recovery well cycling sample
↓	1223	6.81	4.0	7.01	30.9	3160	1.0	-361.1	6.4	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1225	MW-138	6.81	7.01	30.9	3160	1.0	-361.1	6.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-23
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information (6-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4/25/17	1350	NP	10.31	0.0	23.10	17.9	yes	Issue *	yes	yes		Weather: 90°F/cloudy 80°
4/26/17	1050	NP	10.50	0.0			yes	protective casing				

* (but 6" Expandable locking cap is locked)

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1055	10.58	0.5	7.65	25.0	2950	1.8	-360.1	16.0	clear / odor	*Low-flow groundwater sample:*
	1057	10.62	1.0	7.64	25.8	2940	1.5	-357.8	10.8	Brown tint	Ⓐ peristaltic pump w/ ded tubing
	1100	10.66	1.5	7.63	25.7	2930	1.4	-356.2	10.7		B) ded bladder pump
	1102	10.69	2.0	7.62	25.7	2900	1.3	-350.0	9.0		C) non-ded bladder pump; or
	1105	10.72	2.5	7.61	25.6	2890	1.3	-348.2	8.7		*Standard groundwater sample:*
	1107	10.75	3.0	7.60	25.6	2880	1.3	-345.9	8.2		D) bailer due to limited column; or
	1110	10.78	3.5	7.60	25.6	2880	1.2	-343.8	7.8		E) recovery well cycling sample
	1112	10.81	4.0	7.59	25.6	2870	1.2	-342.2	7.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/26/17	1115	MW-23	10.81	7.59	25.6	2870	1.2	-342.2	7.7			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ DUP - TEL - 01 (for same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL - 4
Event: Spring 2017 (Biennial)
Area of Concern: TEL (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: TJA RB / CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1540	NP	5.81	0.0	97.27	22.2	yes	yes	yes	yes		Weather: PC/cloudy 85°
4.27.17	1030	NA	5.84	0.0	27.27	22.2						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.27.17	1035	6.01	0.5	6.70	22.1	5050	2.5	-355.1	7.1	clear, black	*Low-flow groundwater sample:*
	1037	6.01	1.0	6.70	21.1	5130	1.6	-368.2	6.4	particles, odor?	(A) peristaltic pump w/ ded tubing
	1040	6.01	1.5	6.71	20.9	5140	1.2	-372.4	6.1	sheen	B) ded bladder pump
	1042	6.01	2.0	6.72	20.8	5150	1.0	-376.5	5.9		C) non-ded bladder pump; or
	1045	6.01	2.5	6.73	20.7	5150	0.9	-379.8	5.8		*Standard groundwater sample:*
	1047	6.01	3.0	6.73	20.6	5160	0.9	-381.3	5.8		D) bailer due to limited column; or
	1050	6.01	3.5	6.74	20.7	5160	0.8	-382.9	5.5		E) recovery well cycling sample
	1052	6.01	4.0	6.74	20.7	5170	0.8	-383.7	5.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4.27.17	1055	TEL-4	6.01	6.74	20.7	5170	0.8	-383.7	5.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1100	DUP-TEL-01	6.01	6.74	20.7	5170	0.8	-383.7	5.2	Same as above	Same	Same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ EB-TEL-01 (for same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-3
Event: Spring 2017 (Biennial)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAR/CJH

Well Inspection Information (2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1550	NP	4.78	0.0	27.19	22.2	yes	yes	yes	yes		Weather: PT/Cloudy 80s
4.27.17	1125	NP	4.85	0.0	27.19	22.2						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.27.17	1130	5.01	0.5	6.84	24.8	3010	1.0	-372.1	7.9	Clear, sheen,	*Low-flow groundwater sample:*
	1132	5.01	1.0	6.77	22.2	2510	0.9	-378.4	7.3	+ odor	(A) peristaltic pump w/ ded tubing
	1135	5.01	1.5	6.75	21.5	2410	0.8	-383.2	6.8		B) ded bladder pump
	1137	5.01	2.0	6.74	21.3	2370	0.7	-385.6	6.2		C) non-ded bladder pump; or
	1140	5.01	2.5	6.73	21.2	2340	0.7	-388.0	5.8		*Standard groundwater sample:*
	1142	5.01	3.0	6.73	21.2	2320	0.6	-391.1	5.3		D) bailer due to limited column; or
	1145	5.01	3.5	6.72	21.1	2310	0.5	-393.2	4.9		E) recovery well cycling sample
↓	1147	5.01	4.0	6.72	21.1	2310	0.5	-394.9	4.7	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4.27.17	1150	TEL-3	5.01	6.72	21.1	2310	0.5	-394.9	4.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Meat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1205	EB-TEL-01	NA							Same as above	Same	same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-2
Event: Spring 2017 (Biennial)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1600	NP	5.45	0.0	27.20	22.1	yes	yes	yes	yes		Weather: pt/cloudy 80s
4/27/17	1020	NP	5.62	0.0	(27.20)							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1025	5.69	0.5	7.69	25.3	3020	0.9	-357.9	14.7	clear; colorless	*Low-flow groundwater sample:*
	1027	5.69	1.0	7.66	25.0	3050	0.7	-358.0	9.8		(A) peristaltic pump w/ ded tubing
	1030	5.69	1.5	7.54	24.3	3140	0.6	-361.1	9.2		B) ded bladder pump
	1033	5.69	2.0	7.45	24.0	3180	0.6	-361.9	8.0		C) non-ded bladder pump; or
	1035	5.69	2.5	7.37	23.9	3220	0.7	-360.0	7.2		*Standard groundwater sample:*
	1037	5.69	3.0	7.35	23.8	3220	0.7	-359.2	6.4		D) bailer due to limited column; or
	1040	5.69	3.5	7.35	23.8	3230	0.7	-359.2	4.8		E) recovery well cycling sample
↓	1043	5.69	4.0	7.34	23.9	3240	0.7	-359.1	4.4	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/27/17	1045	TEL-2	5.69	7.34	23.9	3240	0.7	-359.1	4.4			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Trip Blank - TEL-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-1
Event: Spring 2017 (Biennial)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information (2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1610	NP	4.66	0.0	27.60	22.9	yes	yes	yes	yes		Weather: pt/cloudy 80s
4/27/17	830	NP	4.76	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	835	5.09	0.5	8.11	22.4	3410	1.3	-255.9	10.3	clear with black particles	*Low-flow groundwater sample:*
	837	5.09	1.0	8.05	22.3	3360	1.1	-261.4	4.8		(A) peristaltic pump w/ ded tubing
	840	5.09	1.5	7.93	22.1	3190	0.9	-278.8	6.0		B) ded bladder pump
	843	5.09	2.0	7.85	22.1	3120	0.8	-287.0	5.8		C) non-ded bladder pump; or
	845	5.09	2.5	7.80	22.0	3100	0.7	-292.1	4.6		*Standard groundwater sample:*
	847	5.09	3.0	7.78	22.0	3090	0.6	-294.4	4.1		D) bailer due to limited column; or
	850	5.09	3.5	7.76	22.1	3080	0.5	-296.1	4.0		E) recovery well cycling sample
	853	5.09	4.0	7.74	22.2	3070	0.4	-297.9	3.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	855	TEL-1	5.09	7.74	22.2	3070	0.4	-297.9	3.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-39
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in stainless steel; short stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1620	NP	5.25	0.0	25.44	20.4	yes	yes	yes	yes		
4/26/17	1855	NP	5.32	0.0								Weather: pt/cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1900	5.45	0.5	7.91	22.1	4420	1.5	-334.9	5.6	clear; colorless	Low-flow groundwater sample:
	1903	5.47	1.0	7.88	22.0	4270	1.3	-336.8	4.8		(A) peristaltic pump w/ ded tubing
	1905	5.47	1.5	7.81	21.9	4320	1.1	-341.7	4.0		B) ded bladder pump
	1907	5.47	2.0	7.75	21.8	4380	0.9	-342.5	3.6		C) non-ded bladder pump; or
	1910	5.47	2.5	7.73	21.8	4390	0.9	-343.1	3.5		Standard groundwater sample:
	1913	5.47	3.0	7.71	21.8	4410	0.9	-344.4	3.4		D) bailer due to limited column; or
	1915	5.47	3.5	7.69	21.8	4420	0.9	-344.7	3.1		E) recovery well cycling sample
	1917	5.47	4.0	7.68	21.8	4430	0.9	-345.6	3.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/26/17	1920	MW-39	5.47	7.68	21.8	4430	0.9	-345.6	3.0			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Prior to 2H16 this well was a "stickup" completion; Area has since been backfilled with a couple feet of soil.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-98
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; At-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1000	NP	6.48	0.0	25.60	21.5	yes	yes	yes	yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1005	6.54	0.5	7.66	23.9	3130	1.4	-383.8	20.3	Clear; colorless	*Low-flow groundwater sample:*
	1007	6.54	1.0	7.59	23.5	3140	1.3	-385.2	18.4		(A) peristaltic pump w/ ded tubing
	1010	6.54	1.5	7.55	23.3	3140	1.3	-385.5	10.9		B) ded bladder pump
	1013	6.54	2.0	7.52	23.3	3140	1.3	-384.2	9.0		C) non-ded bladder pump; or
	1015	6.54	2.5	7.51	23.2	3140	1.2	-384.9	8.2		*Standard groundwater sample:*
	1017	6.54	3.0	7.49	23.1	3140	1.2	-385.3	7.7		D) bailer due to limited column; or
	1020	6.54	3.5	7.48	23.1	3140	1.1	-385.0	5.2		E) recovery well cycling sample
↓	1023	6.54	4.0	7.47	23.1	3140	1.1	-385.0	5.0	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1025	MW-98	6.54	7.47	23.1	3140	1.1	-385.0	5.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(WDS - ~~Corrugated metal, large diameter stickup; gauged to top of corrugated pipe~~) * STEEL "VAULTS" (33" x 33") have been placed over EXISTING corrugated pipe. NEW VAULT

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

RW-10 is permanently covered by heavy steel box

Well: RW-10
Event: Spring 2017 (Biennial)
Area of Concern: Rest

DOES NOT Allow access to WELL. per Robert Combs, Water level and sample point to be collected from stand pipe

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

NEW NEW located approx. 50' South of existing well and vault. (see field photos)

Initials:

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/27/17	930	NA	4.99	0.0	22.49	~~18.8~~ 17.49	yes	yes	Issue *	yes		Weather: pt/cloudy 80°

Well Purging Record

New stick-up = 2.40 * PVC cap on standpipe, unlockable

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	935	5.01	0.5	8.10	22.5	2620	0.8	-355.3	6.00	clear; colorless	Low-flow groundwater sample:
	937	5.01	1.0	8.18	22.1	2590	0.6	-359.4	6.2		(A) peristaltic pump w/ ded tubing
	940	5.01	1.5	8.13	22.0	2580	0.5	-368.8	6.4		B) ded bladder pump
	943	5.01	2.0	8.14	21.9	2560	0.4	-366.8	6.5		C) non-ded bladder pump; or
	945	5.01	2.5	8.16	21.9	2550	0.3	-364.4	5.0		Standard groundwater sample:
	947	5.01	3.0	8.16	21.8	2540	0.3	-366.5	4.8		D) bailer due to limited column; or
	950	5.01	3.5	8.16	21.8	2540	0.2	-367.3	4.5		E) recovery well cycling sample
	953	5.01	4.0	8.16	21.8	2530	0.2	-368.4	4.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	955	RW-10	5.01	8.16	21.8	2530	0.2	-368.4	4.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-40
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB / SCD

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1630	NP	3.30	0.0	24.75	21.8	yes	yes	yes	yes		Weather: pt/cloudy 80°
4/27/17	1146	NA	3.37	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1145	3.53	0.5	7.25	25.4	3280	2.0	-314.5	56.8	Sl. Cloudy black tint	Low-flow groundwater sample:
	1147	3.53	1.0	7.18	24.9	3260	1.6	-343.8	50.8	odor	(A) peristaltic pump w/ ded tubing
	1150	3.53	1.5	7.10	24.6	3250	1.3	-349.7	43.6	↓ ↓	B) ded bladder pump
	1152	3.53	2.0	7.09	24.5	3220	1.1	-350.8	32.5		C) non-ded bladder pump; or
	1155	3.53	2.5	7.05	24.4	3210	1.0	-351.2	23.5	Clear w/ black tint	Standard groundwater sample:
	1157	3.53	3.0	6.99	24.4	3210	1.0	-351.9	18.6	odor	D) bailer due to limited column; or
	1200	3.53	3.5	6.94	24.4	3220	0.9	-353.3	14.3		E) recovery well cycling sample
	1202	3.53	4.0	6.92	24.3	3220	0.9	-353.5	10.1		F) irrigation well grab sample
↓	1205	3.53	4.5	6.91	24.3	3220	0.9	-353.8	9.8	↓ ↓	

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/27/17	1210	MW-40	3.53	6.91	24.3	3220	0.9	-353.8	9.8			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-41
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information (2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1640	NP	3.41	0.0	21.56	18.6	yes	yes	yes	yes		Weather: pt/cloudy/80s
4/26/17	1755	NP	3.48	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1800	3.53	0.5	7.59	21.5	3370	1.7	-304.4	6.7	Clear, colorless	Low-flow groundwater sample:
	1803	3.53	1.0	7.56	21.3	3360	1.5	-309.4	6.9		(A) peristaltic pump w/ ded tubing
	1805	3.53	1.5	7.54	21.2	3350	1.3	-311.5	5.4		B) ded bladder pump
	1807	3.53	2.0	7.51	21.2	3350	1.2	-314.1	5.0		C) non-ded bladder pump; or
	1810	3.53	2.5	7.50	21.2	3340	1.0	-316.2	4.9		Standard groundwater sample:
	1813	3.53	3.0	7.48	21.1	3330	0.9	-317.5	4.9		D) bailer due to limited column; or
	1820	3.53	3.5	7.48	21.1	3330	0.8	-318.4	4.4		E) recovery well cycling sample
	1823	3.53	4.0	7.47	21.1	3330	0.8	-319.9	3.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/26/17	1825	MW-41	3.53	7.47	21.1	3330	0.8	-318.9	3.7			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

ADS (~~Corrugated metal, large diameter RW, stickup~~)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-9 (Stand pipe)
Event: Spring 2017 (Biennial)
Area of Concern: Rest

RW-9 is permanently covered by heavy steel box

Stand pipe NEW ~~Stand pipe~~ NEW

* STEEL "VAULT" (33" x 33") has been placed over EXISTING corrugated pipe. New vault DOES NOT ALLOW access to well. Per Robert Combs, water level and sample point to be collected from Standpipe located approx 90' East of existing well and vault. (SEE FIELD photos)

Hydrologic Monitoring for TRC
Houston, Texas
Initials: TAB/SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/27/17	1050	NA	5.74	0.0	21.83*	~~17.0~~ 16.8	Yes	Yes	Issue**	Yes		Weather: Clear

Well Purging Record

New stick-up = 1.85 * Soft bottom **PVC Cap on standpipe; unlockable

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1055	5.75	0.5	6.69	24.1	3870	2.8	-340.9	7.8	clear black tint; odor	*Low-flow groundwater sample:*
	1057	5.75	1.0	6.74	23.8	3860	2.3	-345.6	7.0		(A) peristaltic pump w/ ded tubing
	1100	5.75	1.5	6.79	23.5	3850	1.9	-347.9	6.5		B) ded bladder pump
	1102	5.75	2.0	6.81	23.2	3870	1.7	-350.2	6.3		C) non-ded bladder pump; or
	1105	5.75	2.5	6.85	23.1	3880	1.5	-352.8	5.9		*Standard groundwater sample:*
	1107	5.75	3.0	6.89	23.1	3880	1.5	-354.5	5.4		D) bailer due to limited column; or
	1110	5.75	3.5	6.90	23.2	3870	1.4	-355.2	5.1		E) recovery well cycling sample
	1112	5.75	4.0	6.91	23.2	3870	1.4	-355.8	4.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4/27/17	1115	RW-9	5.75	6.91	23.2	3870	1.4	-355.8	4.8			Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-42
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1650	NP	6.60	0.0	24.32	21.3	yes	yes	yes	yes		Weather: PT/Cloudy 80°
4/26/17	1600	NP	6.71	0.0								11

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1605	6.73	0.5	7.71	21.0	4120	1.4	-261.6	6.9	clear; colorless	*Low-flow groundwater sample:*
	1607	6.74	1.0	7.66	20.6	4050	1.2	-269.7	4.0		(A) peristaltic pump w/ ded tubing
	1610	6.74	1.5	7.62	20.7	3960	1.1	-278.7	3.4		B) ded bladder pump
	1613	6.74	2.0	7.60	20.7	3930	0.9	-281.5	3.5		C) non-ded bladder pump; or
	1615	6.74	2.5	7.58	20.7	3880	0.8	-285.6	2.0		*Standard groundwater sample:*
	1617	6.74	3.0	7.56	20.7	3870	0.8	-289.9	1.8		D) bailer due to limited column; or
	1620	6.74	3.5	7.55	20.7	3860	0.8	-291.3	1.8		E) recovery well cycling sample
	1623	6.74	4.0	7.54	20.6	3850	0.8	-293.5	1.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1625	MW-42	6.74	7.54	20.6	3850	0.8	-293.5	1.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-29
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

(6-in PVC ; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1740	NP	7.49	0.0	22.00	16.7	Internal	Yes	Issue	Yes	*	Weather: PT/Cloudy 80s
4/26/17	1700	NP	7.55	0.0			Threaded					" "

Cap

↳ No protective casing; unable to lock ↳ * Non standard pad

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1705	7.56	0.5	7.71	21.6	3430	1.2	-183.2	3.7	Clear; colorless	*Low-flow groundwater sample:*
	1707	7.57	1.0	7.69	21.5	3430	1.0	-185.8	3.0		(A) peristaltic pump w/ ded tubing
	1710	7.57	1.5	7.67	21.4	3420	0.9	-188.6	1.8		B) ded bladder pump
	1713	7.57	2.0	7.65	21.3	3410	0.9	-191.9	1.1		C) non-ded bladder pump; or
	1715	7.57	2.5	7.64	21.2	3410	0.8	-192.1	1.0		*Standard groundwater sample:*
	1717	7.57	3.0	7.63	21.2	3410	0.8	-194.6	0.9		D) bailer due to limited column; or
	1720	7.57	3.5	7.63	21.2	3410	0.8	-195.5	0.8		E) recovery well cycling sample
	1723	7.57	4.0	7.62	21.2	3400	0.7	-195.9	0.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1725	MW-29	7.57	7.62	21.2	3400	0.7	-195.9	0.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#16B
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (8 3/8" OD bell-top stickup; PVC) Initials: IAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4/25/17	1710	NP	9.78	0.0	17.70	14.7	YES	YES	Issue	YES	No	Weather: PT/Cloudy 80°
4/26/17	1500	NP	9.83	0.0					(Capped, unable to lock)		Protective casing present	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1505	9.86	0.5	7.83	22.0	4530	1.2	-220.0	4.5	clear; colorless	*Low-flow groundwater sample:*
	1507	9.86	1.0	7.79	21.6	4530	1.1	-221.6	3.1		(A) peristaltic pump w/ ded tubing
	1510	9.86	1.5	7.77	21.2	4520	1.0	-223.3	2.3		B) ded bladder pump
	1513	9.86	2.0	7.75	21.0	4520	1.0	-224.6	2.1		C) non-ded bladder pump; or
	1515	9.86	2.5	7.74	21.0	4520	0.9	-225.2	2.0		*Standard groundwater sample:*
	1517	9.86	3.0	7.73	20.9	4520	0.8	-225.8	1.7		D) bailer due to limited column; or
	1520	9.86	3.5	7.72	20.8	4510	0.8	-226.6	1.2		E) recovery well cycling sample
	1523	9.86	4.0	7.71	20.8	4510	0.8	-226.7	1.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments: Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1525	RW-#16B	9.86	7.71	20.8	4510	0.8	-226.7	1.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-30
Event: Spring 2017 (Biennial)
Area of Concern: Rest

(Gauge Only)
(stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1100	NP	8.30	0.0	23.50	Not Sampled	yes	yes	yes	yes		Weather: PT/Cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-56
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in ; stickup) Initials: TAG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1710	ND	9.55	0.0	26.50	21.4	yes	yes	yes	yes		Weather: pt/cloudy 80°
4/26/17	1400	ND	9.63	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/26/17	1405	9.69	0.5	7.49	22.6	4090	3.2	-312.2	3.8	clear; colorless	*Low-flow groundwater sample:*
	1407	9.69	1.0	7.46	22.2	4120	1.4	-304.0	3.4		(A) peristaltic pump w/ ded tubing
	1410	9.69	1.5	7.44	22.1	4120	1.3	-303.2	3.0		B) ded bladder pump
	1413	9.69	2.0	7.43	22.1	4130	1.1	-299.2	2.7		C) non-ded bladder pump; or
	1415	9.69	2.5	7.41	22.0	4130	1.1	-297.2	2.0		*Standard groundwater sample:*
	1417	9.69	3.0	7.40	21.9	4140	1.0	-294.3	1.8		D) bailer due to limited column; or
	1420	9.69	3.5	7.39	21.9	4150	1.0	-293.5	1.4		E) recovery well cycling sample
	1423	9.69	4.0	7.38	21.8	4160	1.0	-290.9	1.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/26/17	1425	MW-56	9.69	7.38	21.8	4160	1.0	-290.9	1.2	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				~~Neat~~	Field filtered 0.45-u
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Short protective casing stickup; only the section above hinge-line is above-grade

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

* Located under Yellow Barricade

Well: MW-49
Event: Spring 2017 (Biennial)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB/SCD

Well Inspection Information

(2-in; short stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1530	NP	7.60	0.0	33.15	27.8	yes	Non-standard	issue	yes		Weather: pt/cloudy 80s
4/27/17	1005	NA	7.75	0.0				short stickup	→ broken hinge			

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/27/17	1010	7.90	0.5	6.89	24.3	3220	1.8	-306.8	9.5	clear; black tint	*Low-flow groundwater sample:*
	1012	7.90	1.0	6.93	23.5	3240	1.5	-320.2	9.1		(A) peristaltic pump w/ ded tubing
	1015	7.90	1.5	6.97	23.5	3230	1.2	-329.6	8.6		B) ded bladder pump
	1017	7.90	2.0	7.00	23.4	3220	1.0	-331.2	8.2		C) non-ded bladder pump; or
	1020	7.90	2.5	7.02	23.4	3220	0.9	-331.4	7.7		*Standard groundwater sample:*
	1022	7.90	3.0	7.04	23.3	3230	0.9	-331.6	7.5		D) bailer due to limited column; or
	1025	7.90	3.5	7.05	23.3	3230	0.8	-331.9	6.8		E) recovery well cycling sample
↓	1027	7.90	4.0	7.05	23.3	3240	0.8	-332.1	6.3	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/27/17	1030	MW-49	7.90	7.05	23.3	3240	0.8	-332.1	6.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Gravel lot area; relocated by surveyor, 11/15]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-106
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	900	NP	5.70	0.0	22.80	17.5	yes	yes	yes	yes		Weather: PT/C/60s/4 70°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	905	5.74	0.5	7.48	24.1	3040	0.9	-365.6	3.2	clear, colorless	*Low-flow groundwater sample:*
	907	5.75	1.0	7.40	24.0	3020	0.8	-370.9	2.0		(A) peristaltic pump w/ ded tubing
	910	5.76	1.5	7.38	24.0	3010	0.8	-371.9	1.9		B) ded bladder pump
	913	5.77	2.0	7.36	23.9	3000	0.8	-372.9	1.8		C) non-ded bladder pump; or
	915	5.79	2.5	7.34	23.8	3000	0.8	-373.5	2.2		*Standard groundwater sample:*
	917	5.81	3.0	7.33	23.8	3010	0.7	-373.8	3.3		D) bailer due to limited column; or
	920	5.83	3.5	7.32	23.7	3010	0.6	-374.2	3.5		E) recovery well cycling sample
	923	5.84	4.0	7.31	23.7	3000	0.6	-374.2	3.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	925	MW-106	5.84	7.31	23.7	3000	0.6	-374.2	3.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-45
Event: Spring 2017 (Biennial)
Area of Concern: NCL (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4/25/17	1750	ND	4.10	0.0	15.05	12.3	yes	yes	yes	yes		Weather: Clear/cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4/25/17	1755	4.30	0.5	7.94	21.3	4800	2.8	-202.4	43.2	Clear Brown particles	*Low-flow groundwater sample:*
"	1757	4.31	1.0	7.87	21.2	4790	3.1	-201.1	40.2		(A) peristaltic pump w/ ded tubing
	1900	4.31	1.5	7.81	21.1	4780	3.2	-200.6	36.7		B) ded bladder pump
	1803	4.31	2.0	7.73	21.0	4770	3.3	-199.3	34.5		C) non-ded bladder pump; or
	1805	4.31	2.5	7.72	20.9	4780	3.2	-199.7	30.3		*Standard groundwater sample:*
	1807	4.31	3.0	7.71	20.9	4780	2.2	-200.0	27.4		D) bailer due to limited column; or
	1810	4.31	3.5	7.70	20.8	4780	1.5	-200.3	25.1		E) recovery well cycling sample
	1813	4.31	4.0	7.69	20.8	4780	1.4	-200.4	23.0		F) irrigation well grab sample
	1815	4.31	4.5	7.68	20.8	4770	1.2	-201.1	23.1		
↓	1817	4.31	5.0	7.67	20.7	4780	1.2	-200.4	22.9	↓ ↓	

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4/25/17	1820	MW-45	4.31	7.67	20.7	4790	1.2	-200.4	22.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* Located within Artesia Wool laydown yard, N. of the main warehouse

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-50
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup) ✓ Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1135	NA	14.24	0.0	28.22	24.1	yes	yes	yes	yes		Weather: Clear, 80's

Well Purging Record

* SC Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	* SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1140	14.25	0.5	7.15	24.5	6670	2.7	74.7	6.1	Clear; colorless	*Low-flow groundwater sample:*
↓	1142	14.25	1.0	6.97	23.6	6920	1.7	79.4	5.5	↓	(A) peristaltic pump w/ ded tubing
	1145	14.25	1.5	6.95	23.4	6970	1.4	81.5	4.6		B) ded bladder pump
	1147	14.25	2.0	6.93	23.3	7000	1.2	83.6	4.5		C) non-ded bladder pump; or
	1150	14.25	2.5	6.92	23.2	7020	1.1	84.8	3.9		*Standard groundwater sample:*
	1152	14.25	3.0	6.91	23.2	7030	1.1	85.7	3.5		D) bailer due to limited column; or
	1155	14.25	3.5	6.90	23.1	7030	1.0	86.9	3.2		E) recovery well cycling sample
↓	1157	14.25	4.0	6.89	23.1	7040	1.0	87.4	3.0	↓ ✓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1200	MW-50	14.25	6.89	23.1	7040	1.0	87.4	3.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-97
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1220	8.20	8.23	0.03	21.20	(NS)	yes	yes	yes	yes		Weather: Clear, 80's
						5' off base as needed						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not	Sampled due to presence					B) ded bladder pump
			2.0		of	LNAPL. ≥ 0.03'					C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-97								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

10/4/16 - "Torcsill" was doing construction in area. Speak to "Jacob" for future needs.

Monitoring Well Purging and Sampling Record

Navajo Refining Company * Note no longer needed, This was for turn-around Purposes.
Artesia Refinery
Artesia, New Mexico

Well: MW-92
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup) ✓

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1231	10.15	10.19	0.04	22.60	17.6	yes	yes	yes	yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not Sampled due to presence						B) ded bladder pump
			2.0		of LNAPL ≥0.03'						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-92								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride, Fluoride, Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	HNO_3	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tubing.

Inside doghouse

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[Gauge/Sample through 1-in guide-pipe]

Well: RW-1
Event: Spring 2017 (Biennial)
Area of Concern: Rest (inactive)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1240	NA	9.09	0.0	35.39	30.4	yes	yes	yes	yes		Weather: Partly cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1245	NM	0.5	6.96	24.1	4090	1.9	-316.1	26.3	Clear, black	*Low-flow groundwater sample:*
↓	1247	↓	1.0	6.83	22.9	3990	1.6	-336.4	24.1	Tint, black	(A) peristaltic pump w/ ded tubing
	1250		1.5	6.81	22.6	3940	1.4	-339.2	22.9	Particles, odor	B) ded bladder pump
	1252		2.0	6.80	22.5	3910	1.3	-341.9	21.7	↓	C) non-ded bladder pump; or
	1255		2.5	6.79	22.4	3890	1.2	-343.5	21.1		*Standard groundwater sample:*
	1257		3.0	6.78	22.3	3880	1.1	-344.3	20.5		D) bailer due to limited column; or
	1300		3.5	6.77	22.2	3870	1.0	-345.7	20.8		E) recovery well cycling sample
↓	1302	↓	4.0	6.77	22.2	3860	1.0	-346.1	20.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1305	RW-1	NM	6.77	22.2	3860	1.0	-346.1	20.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-91
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1325	NA	9.53	0.0	25.35	17.9	yes	yes	yes	yes		Weather: Clear, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1330	9.68	0.5	6.66	23.9	2490	1.8	-380.1	14.5	Clear, black	*Low-flow groundwater sample:*
↓	1332	9.72	1.0	6.68	23.8	2410	1.5	-397.1	11.4	tint, odor	(A) peristaltic pump w/ ded tubing
	1335	9.75	1.5	6.69	23.5	2380	1.4	-401.0	10.1	↓	B) ded bladder pump
	1337	9.78	2.0	6.70	23.3	2360	1.3	-404.0	9.3		C) non-ded bladder pump; or
	1340	9.80	2.5	6.70	23.2	2350	1.2	-406.0	9.1		*Standard groundwater sample:*
	1342	9.82	3.0	6.71	23.1	2340	1.1	-407.0	8.9		D) bailer due to limited column; or
	1345	9.84	3.5	6.71	23.1	2330	1.1	-408.0	8.8		E) recovery well cycling sample
↓	1347	9.85	4.0	6.72	23.0	2320	1.0	-408.0	8.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1350	MW-91	9.85	6.72	23.0	2320	1.0	-408.0	8.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-90
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1405	NA	10.47	0.0	22.80	21.5	yes	yes	yes	yes		Weather: Clear, 80's

Well Purging Record

* pH Confirmed * ORP Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	* pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	* Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1410	10.57	0.5	7.16	21.9	4790	2.1	-354.1	12.1	clear, odor	*Low-flow groundwater sample:*
|	1412	10.60	1.0	7.02	21.5	4820	1.6	-349.6	10.7	|	(A) peristaltic pump w/ ded tubing
|	1415	10.62	1.5	6.98	21.2	4860	1.4	-346.4	9.2	|	B) ded bladder pump
|	1417	10.64	2.0	6.96	21.1	4880	1.3	-343.1	8.4	|	C) non-ded bladder pump; or
|	1420	10.65	2.5	6.95	21.0	4910	1.2	-341.5	8.0	|	*Standard groundwater sample:*
|	1422	10.66	3.0	6.94	20.9	4930	1.1	-339.8	7.9	|	D) bailer due to limited column; or
|	1425	10.67	3.5	6.93	20.9	4950	1.0	-337.6	7.7	|	E) recovery well cycling sample
↓	1427	10.67	4.0	6.93	21.0	4960	1.0	-336.0	7.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1430	MW-90	10.67	6.93	21.0	4960	1.0	-336.0	7.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-96
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1445	NA	10.28	0.0	25.57	21.2	yes	*Issue	*needs lock	yes		Weather: Clear, 80's

Well Purging Record

*Damaged hinge prevents Prot. casing from shutting properly, which results in the inability to lock the well

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1450	10.29	0.5	6.80	23.0	2330	2.4	-370.4	16.8	Clear, white particles, odor	*Low-flow groundwater sample:*
	1452	10.29	1.0	6.79	22.8	2220	2.1	-374.1	13.7		(A) peristaltic pump w/ ded tubing
	1455	10.29	1.5	6.78	22.6	2190	1.9	-377.9	11.1		B) ded bladder pump
	1457	10.29	2.0	6.77	22.5	2170	1.8	-380.1	9.8		C) non-ded bladder pump; or
	1500	10.29	2.5	6.77	22.4	2150	1.7	-382.5	9.4		*Standard groundwater sample:*
	1502	10.29	3.0	6.76	22.3	2140	1.6	-383.5	9.3		D) bailer due to limited column; or
	1505	10.29	3.5	6.75	22.2	2140	1.5	-384.8	8.7		E) recovery well cycling sample
	1507	10.29	4.0	6.75	22.2	2130	1.5	-386.0	8.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1510	MW-96	10.29	6.75	22.2	2130	1.5	-386.0	8.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

(Bagged tubing)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-94
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1525	NA	10.52	0.0	23.45	16.0	yes	yes	yes	yes		Weather: Clear, 70's
4.26.17	1355	NA	10.81	0.0	23.45	16.0						

Well Purging Record

* SC Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	* SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1400	10.94	0.5	6.96	22.2	3230	3.2	-411.0	6.1	Clear, yellow	*Low-flow groundwater sample:*
	1402	10.96	1.0	6.96	21.5	3220	2.2	-425.0	5.7	tint, odor	(A) peristaltic pump w/ ded tubing
	1405	10.98	1.5	6.96	21.4	3200	1.9	-430.0	5.4		B) ded bladder pump
	1407	10.99	2.0	6.95	21.4	3190	1.8	-434.0	5.2		C) non-ded bladder pump; or
	1410	11.00	2.5	6.95	21.3	3180	1.7	-437.0	4.9		*Standard groundwater sample:*
	1412	11.01	3.0	6.95	21.2	3180	1.6	-439.0	4.7		D) bailer due to limited column; or
	1415	11.01	3.5	6.94	21.2	3170	1.5	-441.0	4.4		E) recovery well cycling sample
	1417	11.02	4.0	6.94	21.2	3170	1.5	-442.0	3.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1420	MW-94	11.02	6.94	21.2	3170	1.5	-442.0	3.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Inside doghouse

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge/Sample through 1-in PVC guide-pipe

Well: RW-8
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1536	NA	9.96	0.0	37.22	35.2	yes	yes	yes	yes		Weather: Clear, 70's
4.26.17	1440	NA	10.13	0.0	37.22	35.2						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1445	NM	0.5	6.82	22.6	2340	3.1	-368.1	79.1	SI Cloudy, Black	*Low-flow groundwater sample:*
	1447	|	1.0	6.76	22.3	2280	1.8	-370.4	60.4	particles, odor	(A) peristaltic pump w/ ded tubing
	1450	|	1.5	6.74	22.1	2260	1.6	-365.5	45.7	↓ ↓	B) ded bladder pump
	1452	|	2.0	6.73	22.1	2250	1.4	-362.1	34.2	↓ ↓	C) non-ded bladder pump; or
	1455	|	2.5	6.72	22.0	2240	1.2	-360.4	30.7	Clear, Black	*Standard groundwater sample:*
	1457	|	3.0	6.71	21.9	2230	1.1	-358.9	28.9	particles, odor	D) bailer due to limited column; or
	1500	|	3.5	6.70	21.9	2220	1.0	-356.1	29.1	↓ ↓	E) recovery well cycling sample
↓	1502	↓	4.0	6.69	21.8	2220	1.0	-354.5	27.8	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1505	RW-8	NM	6.69	21.8	2220	1.0	-354.5	27.8	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Next	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-67
Event: Spring 2017 (Biennial)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1545	NA	8.18	0.0	27.30	19.9	yes	yes	yes	yes		Weather:
4.26.17	1550	NA	8.34	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1555	8.48	0.5	6.93	21.6	2490	2.6	-370.1	9.4	clear, light	*Low-flow groundwater sample:*
|	1557	8.52	1.0	6.92	21.4	2510	2.0	-384.7	8.4	yellow tint, odor	(A) peristaltic pump w/ ded tubing
|	1600	8.54	1.5	6.92	21.3	2530	1.8	-388.6	8.1	|	B) ded bladder pump
|	1602	8.55	2.0	6.91	21.3	2540	1.7	-390.5	7.8	|	C) non-ded bladder pump; or
|	1605	8.55	2.5	6.91	21.2	2550	1.6	-392.4	7.5	|	*Standard groundwater sample:*
|	1607	8.55	3.0	6.90	21.2	2560	1.5	-394.5	7.2	|	D) bailer due to limited column; or
|	1610	8.55	3.5	6.89	21.3	2560	1.4	-395.1	6.5	|	E) recovery well cycling sample
↓	1612	8.55	4.0	6.89	21.3	2560	1.4	-396.8	5.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1615	MW-67	8.55	6.89	21.3	2560	1.4	-396.8	5.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45 u~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
							Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-95
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1553	NA	11.02	0.0	25.37	20.4	yes	yes	yes	yes		Weather: Clear, 70's
4.26.17	1645	NA	11.15	0.0	25.37	20.4						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1650	11.20	0.5	7.05	23.3	2480	2.4	-329.4	10.5	clear, odor	*Low-flow groundwater sample:*
↓	1652	11.21	1.0	6.96	23.1	2460	1.9	-345.8	7.1	↓	(A) peristaltic pump w/ ded tubing
↓	1655	11.21	1.5	6.93	22.9	2440	1.7	-355.7	6.2	↓	B) ded bladder pump
↓	1657	11.21	2.0	6.91	22.8	2420	1.6	-360.1	5.1	↓	C) non-ded bladder pump; or
↓	1700	11.21	2.5	6.89	22.7	2410	1.5	-363.2	4.0	↓	*Standard groundwater sample:*
↓	1702	11.21	3.0	6.88	22.7	2390	1.5	-365.1	3.7	↓	D) bailer due to limited column; or
↓	1705	11.21	3.5	6.87	22.6	2390	1.4	-367.5	3.3	↓	E) recovery well cycling sample
↓	1707	11.21	4.0	6.86	22.6	2380	1.4	-369.0	2.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1710	MW-95	11.21	6.86	22.6	2380	1.4	-369.0	2.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	~~Neat~~	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged tubing.

Inside doghouse

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

* Gauge/Sample through 1-in PVC gutde-pipe

Well: RW-7
Event: Spring 2017 (Biennial)
Area of Concern: REST

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1604	NA	15.61	0.0	37.00	32.0	Yes	yes	yes	yes		Weather: Clear, 70's
4.26.17	1310	NA	15.82	0.0	37.00	32.0						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1315	NM *	0.5	6.92	24.3	6880	1.7	-257.1	13.0	Clear, small	*Low-flow groundwater sample:*
↓	1317	↓	1.0	6.82	23.6	6820	1.5	-223.4	12.1	black particles,	(A) peristaltic pump w/ ded tubing
	1320		1.5	6.80	23.5	6810	1.4	-207.6	10.6	odor	B) ded bladder pump
	1322		2.0	6.79	23.4	6820	1.3	-201.7	10.2	↓	C) non-ded bladder pump; or
	1325		2.5	6.78	23.4	6820	1.2	-195.6	9.8		*Standard groundwater sample:*
	1327		3.0	6.78	23.5	6830	1.1	-191.4	9.5		D) bailer due to limited column; or
	1330		3.5	6.77	23.5	6840	1.1	-187.8	9.1		E) recovery well cycling sample
↓	1332	↓	4.0	6.77	23.5	6840	1.0	-184.5	8.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1335	RW-7	NM	6.77	23.5	6840	1.0	-184.5	8.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-34A
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1613	NA	9.81	0.0	19.31	16.9	*Issue	yes	yes	yes		Weather: Clear, 70's
4.26.17	1225	NA	9.99	0.0	19.31	16.9						

Well Purging Record

*Cannot fit cap and close Prot. casing lid simultaneously, PVC casing needs to be lowered, or prot casing raised. Left w/ no cap, Well Secure.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1230	10.12	0.5	6.64	22.3	2180	2.1	-360.8	4.5	clear, odor	*Low-flow groundwater sample:*
	1232	10.15	1.0	6.62	21.9	2160	1.8	-365.1	4.3		(A) peristaltic pump w/ ded tubing
	1235	10.15	1.5	6.61	21.7	2140	1.6	-368.4	3.8		B) ded bladder pump
	1237	10.15	2.0	6.60	21.6	2130	1.5	-371.2	3.5		C) non-ded bladder pump; or
	1240	10.15	2.5	6.60	21.5	2130	1.4	-373.5	3.2		*Standard groundwater sample:*
	1242	10.15	3.0	6.59	21.4	2120	1.4	-375.0	2.9		D) bailer due to limited column; or
	1245	10.15	3.5	6.58	21.3	2120	1.3	-377.1	2.5		E) recovery well cycling sample
	1247	10.15	4.0	6.58	21.3	2110	1.3	-378.3	2.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
4.26.17	1250	NCL-34A	10.15	6.58	21.3	2110	1.3	-378.3	2.4	DRO	HCL	Lab: ESC Lab Sciences, Mt. Juliet, TN 8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-33
Event: Spring 2017 (Biennial)
Area of Concern: NCL (2-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4.25.17	~~1621~~ CJH	NA	7.89	0.0	19.60	17.7	yes	yes	yes	yes		Weather: Clear, 70's
4.26.17	1145	NA	8.01	0.0	19.60	17.7						

Well Purging Record

*ORP Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	~~X~~Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1150	8.11	0.5	6.77	21.1	3000	3.6	13.6	9.1	Clear ; colorless	Low-flow groundwater sample:
	1153	8.19	1.0	6.72	20.9	3000	2.4	26.4	8.7		(A) peristaltic pump w/ ded tubing
	1155	8.24	1.5	6.70	20.8	3010	2.0	31.1	8.4		B) ded bladder pump
	1158	8.27	2.0	6.69	20.8	3010	1.8	34.0	8.2		C) non-ded bladder pump; or
	1200	8.30	2.5	6.68	20.7	3020	1.7	35.9	7.9		Standard groundwater sample:
	1203	8.33	3.0	6.67	20.7	3030	1.6	36.7	7.5		D) bailer due to limited column; or
	1205	8.36	3.5	6.67	20.8	3030	1.5	37.5	7.7		E) recovery well cycling sample
	1208	8.39	4.0	6.66	20.8	3030	1.5	38.4	7.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments: Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1210	NCL-33	8.39	6.66	20.8	3030	1.5	38.4	7.4	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-44
Event: Spring 2017 (Biennial)
Area of Concern: NCL (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1629	NA	8.12	0.0	21.57	17.4	*Issue	yes	yes	yes		Weather: Clear, 60's
4.26.17	1100	NA	8.23	0.0	21.57	17.4						

* Cannot fit cap and close prot. casing simultaneously. Left w/ no cap, well secured.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1105	8.27	0.5	6.77	20.0	2540	2.8	-208.1	12.3	Clear, light	Low-flow groundwater sample:
	1107	8.27	1.0	6.72	19.8	2540	2.1	-234.1	10.9	yellow tint,	(A) peristaltic pump w/ ded tubing
	1110	8.27	1.5	6.68	19.8	2550	1.8	-240.5	9.5	Sl. odor	B) ded bladder pump
	1112	8.27	2.0	6.66	19.7	2550	1.7	-244.8	9.2	↓	C) non-ded bladder pump; or
	1115	8.27	2.5	6.65	19.7	2560	1.6	-247.5	8.6	↓	Standard groundwater sample:
	1117	8.27	3.0	6.64	19.7	2560	1.6	-250.4	8.1	↓	D) bailer due to limited column; or
	1120	8.27	3.5	6.63	19.6	2560	1.5	-253.7	7.9	↓	E) recovery well cycling sample
↓	1122	8.27	4.0	6.63	19.6	2560	1.5	-256.2	7.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1125	NCL-44	8.27	6.63	19.6	2560	1.5	-256.2	7.5	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Redeveloped 10/4/16

+ EB-NCL-01 (for same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-32
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in ; at-grade) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1639	NA	8.26	0.0	20.06	18.1	yes	yes	yes	yes		Weather: Clear, 60's
4.26.17	1010	NA	8.35	0.0	20.06	18.1						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	1015	8.46	0.5	7.26	18.9	2480	3.4	-45.3	26.1	Clear, small	*Low-flow groundwater sample:*
	1017	8.47	1.0	7.19	18.9	2470	2.5	-38.1	22.4	white particles	(A) peristaltic pump w/ ded tubing
	1020	8.47	1.5	7.12	19.0	2460	2.2	-35.7	19.7		B) ded bladder pump
	1022	8.47	2.0	7.07	19.0	2460	2.1	-32.5	19.0		C) non-ded bladder pump; or
	1025	8.47	2.5	7.05	19.1	2450	2.0	-30.1	18.3		*Standard groundwater sample:*
	1027	8.47	3.0	7.02	19.1	2440	1.9	-28.7	17.5		D) bailer due to limited column; or
	1030	8.47	3.5	6.99	19.2	2440	1.8	-27.2	17.2		E) recovery well cycling sample
	1032	8.47	4.0	6.97	19.2	2440	1.8	-26.5	16.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1035	NCL-32	8.47	6.97	19.2	2440	1.8	-26.5	16.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Need	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1045	EB-NCL-01	NA							Same as above	same	same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* Access by foot

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-108
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1710	NA	12.31	0.0	27.74	22.5	yes	yes	yes	yes		Weather: Clear, 50's
4.26.17	840	NA	12.59	0.0	27.74	22.5						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	845	12.72	0.5	6.61	18.6	2360	2.2	-347.1	14.5	clear, yellow	*Low-flow groundwater sample:*
|	847	12.80	1.0	6.72	18.6	2410	2.0	-359.7	10.8	tint, odor	(A) peristaltic pump w/ ded tubing
|	850	12.84	1.5	6.77	18.7	2430	1.9	-367.4	9.5	|	B) ded bladder pump
|	852	12.88	2.0	6.80	18.8	2440	1.8	-372.5	9.1	|	C) non-ded bladder pump; or
|	855	12.91	2.5	6.82	18.9	2450	1.8	-375.1	8.9	|	*Standard groundwater sample:*
|	857	12.94	3.0	6.84	19.0	2460	1.7	-378.4	8.7	|	D) bailer due to limited column; or
|	900	12.96	3.5	6.85	19.0	2470	1.6	-381.0	8.3	|	E) recovery well cycling sample
↓	902	12.98	4.0	6.86	19.1	2470	1.6	-383.5	7.9	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	905	MW-108	12.98	6.86	19.1	2470	1.6	-383.5	7.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* SW of NCL field

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-31
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection: Cap	Casing	Well Secured	Label	Other	Comments
4.25.17	1648	NA	8.91	0.0	20.16	17.4	*Issue	yes	yes	yes		Weather: Clear, 60's
4.26.17	925	NA	9.14	0.0	20.16	17.4						

Well Purging Record

* Cannot fit cap and close prot. casing simultaneously. Left w/ no cap; well secure.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.26.17	930	9.34	0.5	7.36	18.8	3000	2.3	-209.1	9.1	Clear, small white	Low-flow groundwater sample:
	932	9.37	1.0	7.15	18.6	3020	1.8	-182.0	8.7	particles, sl.	(A) peristaltic pump w/ ded tubing
	935	9.37	1.5	7.09	18.6	3030	1.6	-167.1	8.4	odor	B) ded bladder pump
	937	9.37	2.0	7.06	18.5	3030	1.5	-160.5	7.8		C) non-ded bladder pump; or
	940	9.37	2.5	7.04	18.5	3040	1.4	-157.2	7.3		Standard groundwater sample:
	942	9.37	3.0	7.03	18.4	3040	1.3	-154.9	6.9		D) bailer due to limited column; or
	945	9.37	3.5	7.02	18.4	3050	1.2	-152.4	6.5		E) recovery well cycling sample
	947	9.37	4.0	7.01	18.4	3050	1.2	-150.5	6.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments: Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	950	NCL-31	9.37	7.01	18.4	3050	1.2	-150.5	6.4	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-19 (Gauge only)
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

(6-in; Stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1657	NA	9.27	0.0	22.08	Not Sampled	yes	*Issue	*Issue	yes		Weather: pt. cloudy, 80s

Well Purging Record

* No Prot. Casing, just exposed PVC Casing, well Cannot be Secured.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	Field filtered 0.45-u
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-55
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: C JH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1731	NA	9.73	0.0	26.58	21.7	yes	yes	yes	yes		Weather: pt. cloudy, 80s
4.27.17	935	NA	9.82									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.27.17	940	9.84	0.5	6.99	21.4	3270	3.7	-110.4	14.6	clear; colorless	*Low-flow groundwater sample:*
	942	9.84	1.0	6.89	21.0	3300	2.8	-119.6	10.9		(A) peristaltic pump w/ ded tubing
	945	9.84	1.5	6.80	20.6	3340	2.2	-124.7	9.6		B) ded bladder pump
	947	9.84	2.0	6.73	20.5	3360	2.0	-131.4	9.1		C) non-ded bladder pump; or
	950	9.84	2.5	6.72	20.6	3370	1.8	-134.8	8.7		*Standard groundwater sample:*
	952	9.84	3.0	6.71	20.6	3370	1.7	-137.5	8.2		D) bailer due to limited column; or
	955	9.84	3.5	6.71	20.7	3380	1.6	-140.0	6.9		E) recovery well cycling sample
	957	9.84	4.0	6.70	20.7	3380	1.6	-142.6	6.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.27.17	1000	MW-55	9.84	6.70	20.7	3380	1.6	-142.6	6.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO_3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#17A
Event: Spring 2017 (Biennial)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (6-in PVC stickup w/ belled top) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1740	NA	9.02	0.0	16.02	14.0	yes	*Issue	*Issue	yes		Weather: Clear, 60's
4.26.17	1730	NA	9.07	0.0	(soft)	14.0						

Well Purging Record

*No prot. casing, just exposed PVC, well is unable to be secured.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV) **	Turbidity (NTU)	Water Color / Clarity	** ORP Confirmed
4.26.17	1735	9.08	0.5	6.97	20.3	4850	2.0	-221.4	13.1	Clear	*Low-flow groundwater sample:*
	1737	9.08	1.0	6.90	19.9	4940	1.7	-223.5	11.8		(A) peristaltic pump w/ ded tubing
	1740	9.08	1.5	6.86	19.7	4970	1.6	-228.0	9.0		B) ded bladder pump
	1742	9.08	2.0	6.84	19.6	4990	1.5	-231.7	8.2		C) non-ded bladder pump; or
	1745	9.08	2.5	6.83	19.5	5010	1.4	-233.5	7.4		*Standard groundwater sample:*
	1747	9.08	3.0	6.82	19.4	5030	1.3	-234.7	7.2		D) bailer due to limited column; or
	1750	9.08	3.5	6.82	19.3	5040	1.2	-235.8	6.9		E) recovery well cycling sample
	1752	9.08	4.0	6.81	19.3	5050	1.2	-237.6	6.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.26.17	1755	RW-#17A	9.08	6.81	19.3	5050	1.2	-237.6	6.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1723	NA	9.55	0.0	22.20	20.2	yes	yes	yes	yes		Weather: Clear, 60's
4.27.17	850	NA	9.61	0.0	22.20	20.2						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.27.17	855	9.65	0.5	6.76	20.8	2900	3.4	17.5	6.3	Clear	*Low-flow groundwater sample:*
↓	857	9.65	1.0	6.83	20.6	2950	3.0	27.7	5.8	↓	(A) peristaltic pump w/ ded tubing
	900	9.65	1.5	6.87	20.5	2970	2.9	32.8	5.4		B) ded bladder pump
	902	9.65	2.0	6.89	20.5	2980	2.7	35.5	5.1		C) non-ded bladder pump; or
	905	9.65	2.5	6.90	20.4	2980	2.6	37.2	5.0		*Standard groundwater sample:*
	907	9.65	3.0	6.91	20.4	2990	2.5	39.2	4.9		D) bailer due to limited column; or
	910	9.65	3.5	6.92	20.3	3000	2.4	40.9	4.8		E) recovery well cycling sample
↓	912	9.65	4.0	6.92	20.3	3010	2.4	41.6	4.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.27.17	915	MW-18	9.65	6.92	20.3	3010	2.4	41.6	4.7	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Short List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO_3	6010/6020 and/or 7470
						Long List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					Neat	Field filtered 0.45-u
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-54A
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1050	NA	10.39	0.0	31.30	23.6	yes	yes	yes	yes		Weather: Clear, 60's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1055	10.42	0.5	6.81	23.8	2070	3.5	48.0	7.7	Clear, colorless	*Low-flow groundwater sample:*
↓	1057	10.42	1.0	6.69	23.6	2080	2.4	57.2	7.2	↓	(A) peristaltic pump w/ ded tubing
	1100	10.42	1.5	6.66	23.5	2080	2.1	61.5	7.0		B) ded bladder pump
	1102	10.42	2.0	6.64	23.4	2090	2.0	65.7	6.4		C) non-ded bladder pump; or
	1105	10.42	2.5	6.63	23.3	2100	1.9	68.9	5.5		*Standard groundwater sample:*
	1107	10.42	3.0	6.63	23.3	2100	1.8	71.4	5.2		D) bailer due to limited column; or
	1110	10.42	3.5	6.62	23.2	2100	1.8	73.5	4.8		E) recovery well cycling sample
↓	1112	10.42	4.0	6.62	23.2	2110	1.7	75.0	4.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1115	MW-54A	10.42	6.62	23.2	2110	1.7	75.0	4.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	Neat	Field filtered 0.45-u
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-54B
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	1010	NA	10.37	0.0	46.80	41.8	yes	yes	yes	yes		Weather: Clear, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	1015	10.42	0.5	7.21	23.2	2150	2.1	37.8	7.4	Clear; colorless	*Low-flow groundwater sample:*
|	1017	10.42	1.0	7.00	22.5	2130	1.8	51.5	6.9	|	(A) peristaltic pump w/ ded tubing
|	1020	10.42	1.5	6.90	22.0	2120	1.6	62.5	6.3	|	B) ded bladder pump
|	1022	10.42	2.0	6.84	21.9	2100	1.5	65.7	6.0	|	C) non-ded bladder pump; or
|	1025	10.42	2.5	6.80	21.9	2080	1.4	68.4	5.7	|	*Standard groundwater sample:*
|	1027	10.42	3.0	6.78	21.8	2060	1.3	70.3	5.2	|	D) bailer due to limited column; or
|	1030	10.42	3.5	6.77	21.8	2050	1.2	72.6	4.9	|	E) recovery well cycling sample
↓	1032	10.42	4.0	6.76	21.8	2040	1.2	74.1	4.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	1035	MW-54B	10.42	6.76	21.8	2040	1.2	74.1	4.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				~~Neat~~	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank - NCL-01

Monitoring Well Purging and Sampling Record

+ DUP-NCL-01 (for same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-49
Event: Spring 2017 (Biennial)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	920	NA	14.03	0.0	32.18	27.2	yes	yes	yes	yes		Weather: Clear, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	925	14.07	0.5	7.16	22.3	2910	2.1	34.5	10.7	Clear; colorless	Low-flow groundwater sample:
	927	14.07	1.0	7.06	21.6	2970	1.8	51.4	9.1		(A) peristaltic pump w/ ded tubing
	930	14.07	1.5	6.99	21.4	2990	1.7	62.7	8.5		B) ded bladder pump
	932	14.07	2.0	6.96	21.4	3010	1.6	67.8	8.0		C) non-ded bladder pump; or
	935	14.07	2.5	6.95	21.3	3020	1.5	71.5	7.2		Standard groundwater sample:
	937	14.07	3.0	6.94	21.3	3020	1.4	73.9	6.5		D) bailer due to limited column; or
	940	14.07	3.5	6.93	21.4	3030	1.3	75.8	5.4		E) recovery well cycling sample
↓	942	14.07	4.0	6.93	21.4	3030	1.3	76.5	4.9	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	945	NCL-49	14.07	6.93	21.4	3030	1.3	76.5	4.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				Neat	Field filtered 0.45-u
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
						~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	900	DUP-NCL-01	14.07	6.93	21.4	3030	1.3	76.5	4.9	Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* ~15' S. of 70 mile marker off 285 northbound

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-53
Event: Spring 2017 (Biennial)
Area of Concern: NCL (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
4.25.17	840	NA	9.54	0.0	23.60	19.6	yes	yes	yes	yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
4.25.17	845	9.67	0.5	6.66	21.4	2610	2.4	100.4	3.7	clear; colorless	*Low-flow groundwater sample:*
	847	9.69	1.0	6.74	21.3	2630	2.1	91.6	3.4		(A) peristaltic pump w/ ded tubing
	850	9.69	1.5	6.79	21.1	2650	2.0	86.1	3.5		B) ded bladder pump
	852	9.69	2.0	6.82	21.0	2660	1.9	84.2	3.2		C) non-ded bladder pump; or
	855	9.69	2.5	6.84	21.0	2670	1.8	82.5	2.9		*Standard groundwater sample:*
	857	9.69	3.0	6.85	20.9	2680	1.7	81.3	2.6		D) bailer due to limited column; or
	900	9.69	3.5	6.86	20.9	2690	1.7	80.5	2.5		E) recovery well cycling sample
	902	9.69	4.0	6.87	21.0	2690	1.6	79.6	2.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
4.25.17	905	MW-53	9.69	6.87	21.0	2690	1.6	79.6	2.5	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Short List Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se)					Field filtered 0.45-u
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
							~~***Long List*** Dissolved Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~Field filtered 0.45-u~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Instrument Calibration Log

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Hydrologic Monitoring
for TRC
Houston, Texas

Date	Time	pH Hanna (Std. units)	Specific Conductivity Hanna (umho/cm)	Dissolved Oxygen Hanna (Slope Cal. in saturated air)	Turbidity Lamotte (NTU)	ORP Hanna HI 7020 Soln (200-275 mV)	PID Thermo Environmental 100 ppm Isobutylene	Initials / Comments
4/25/17	0630	4.01/7.00	1,000	100%	10.0	240.5	NA	SCH
4/25/17	0635	4.01/7.00	1,000	100%	10.0	251.8	NA	TAB
4/25/17	0639	4.01/7.00	1,000	100%	10.0	262.4	NA	BB
4/25/17	0644	4.01/7.00	1,000	100%	10.0	249.1	NA	GDS
4/25/17	0650	4.01/7.00	1,000	100%	10.0	233.9	NA	BRH
4.25.17	0653	4.01/7.00	1,000	100%	10.0	246.7	NA	CJH
4-25-17	0655	4.01/7.00	1,000	100%	10.0	239.4	NA	MDB
4-25-17	0658	4.01/7.00	1,000	100%	10.0	243.7	NA	SCD
4/26/17	0620	4.01/7.00	1,000	100%	10.0	238.1	NA	SCH
4/26/17	0629	4.01/7.00	1,000	100%	10.0	241.1	NA	GDS
4/26/17	0633	4.01/7.00	1,000	100%	10.0	250.3	NA	BB
4/26/17	0635	4.01/7.00	1,000	100%	10.0	248.9	NA	TAB
4-26-17	0638	4.01/7.00	1,000	100%	10.0	237.1	NA	BRH
4-26-17	0640	4.01/7.00	1,000	100%	10.0	242.3	NA	SCD
4.26.17	0642	4.01/7.00	1,000	100%	10.0	245.7	NA	CJH
4-26-17	0645	4.01/7.00	1,000	100%	10.0	231.4	NA	MDB
4/27/17	0615	4.01/7.00	1,000	100%	10.0	239.5	NA	SCH
4/27/17	0622	4.01/7.00	1,000	100%	10.0	234.0	NA	BRH
4/27/17	0626	4.01/7.00	1,000	100%	10.0	243.2	NA	BB
4-27-17	0628	4.01/7.00	1,000	100%	10.0	248.6	NA	MDB
4.27.17	0630	4.01/7.00	1,000	100%	10.0	243.7	NA	CJH
4-27-17	0633	4.01/7.00	1,000	100%	10.0	245.6	NA	SCD
4-27-17	0635	4.01/7.00	1,000	100%	10.0	251.8	NA	TAB
4/27/17	0644	4.01/7.00	1,000	100%	10.0	244.8	NA	GDS

Company Name/Address
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

ESC

Report to: Julie Speer

Email To: speer@trcwsolutions.com

Project Description: **EP Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: EP (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Immediately Packed on Ice: N ___ Y ✓

Lab # L905300

G136

Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) (2)	Anions	NO2NO3, TDS (2)	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
~~MW-79~~	Grab	GW					X	X	X	X	X	X	X			
MW-82	Grab	GW		4/25/17	1605	10	X	X	X	X	X	X	X			-01
MW-74	Grab	GW		4/25/17	1450	10	X	X	X	X	X	X	X			02
MW-73	Grab	GW		4/25/17	1405	10	X	X	X	X	X	X	X			03
~~MW-2A~~	Grab	GW					X	X	X	X	X	X	X			
MW-72	Grab	GW		4/25/17	1255	10	X	X	X	X	X	X	X			04
OCD-6	Grab	GW		4/25/17	1005	10	X	X	X	X	X	X	X			05
OCD-7AR	Grab	GW		4/25/17	1055	10	X	X	X	X	X	X	X			06
OCD-7B	Grab	GW		4/25/17	1150	10	X	X	X	X	X	X	X			07
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks: **Dissolved metals field-filtered.** This COC represents shipment 1. Project is continuing. 7293 8327 4194

Flow _____ Other _____

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			M

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 1.5 °C Bottles Received: 23

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: C 2 7/2 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com
Project Description: **EP Spring 2017**
City/State Collected: NM
Phone: 512-684-3170
Fax:
Client Project #
Lab Project #
Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: EP (Navajo - Artesia)
P.O. #: 107027
Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓
Rush? (Lab MUST Be Notified): Same Day 200% / Next Day 100% / Two Day 50% / Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

ESC

Lab # L905300

Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) (2)	Anions	NO2NO3, TDS (2)	Long List Metals (Total & Dissolved)	Cyanide (2)	Sample # (lab only)
~~MW-123~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-4A~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-4B~~	Grab	GW					X	X	X	X	X	X	X			
MW-5A	Grab	GW		4/25/17	1235	10	X	X	X	X	X	X	X			08
MW-5B	Grab	GW		4/25/17	1330	10	X	X	X	X	X	X	X			09
MW-5C	Grab	GW		4/25/17	1415	10	X	X	X	X	X	X	X			10
MW-7A	Grab	GW		4/25/17	1055	10	X	X	X	X	X	X	X			11
MW-7B	Grab	GW		4/25/17	1150	10	X	X	X	X	X	X	X			12
OCD-8A	Grab	GW		4/25/17	1010	11	X	X	X		X	X	X	X	X	13
OCD-8B	Grab	GW		4/25/17	925	10	X	X	X	X	X	X	X			14

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 1.3 °C Bottles Received: 231
Date: 4-27-17 Time: 900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **EP Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: EP (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Immediately Packed on Ice: N ___ Y ✓

Analysis / Container / Preservative

Chain of Custody Page 3 of 20

ESC LABORATORIES

Lab # L905300

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 2	Anions	NO2/NO3, TDS 2	Long List Metals (Total & Dissolved)	Cyanide
~~MW-1R~~	Grab	GW					X	X		X	X	X	X		
~~MW-1S~~	Grab	GW					X	X	X	X	X	X	X		
~~OCD-1R~~	Grab	GW					X	X	X	X	X	X	X		
~~OCD-2A~~	Grab	GW					X	X	X	X	X	X	X		
~~OCD-3~~	Grab	GW					X	X	X	X	X	X	X		
~~OCD-4~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-11A~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-11B~~	Grab	GW					X	X	X	X	X	X	X		
~~OCD-5~~	Grab	GW					X	X	X	X	X	X	X		
MW-87	Grab	GW		4/25/17	1720	10	X	X	X	X	X	X	X		

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 1.8 °C Bottles Received: 231

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Page 4 of 20

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report To: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: **EP Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: EP (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide 12	Matrix Lab Comments	Sample # (lab only)
MW-18A	Grab	GW		4/25/17	1330	9	X	X			X	X	X	X	X		16
MW-18B	Grab	GW		4/25/17	1420	10	X	X	X	X	X	X	X				17
MW-70	Grab	GW		4/25/17	1520	10	X	X	X	X	X	X	X				18
MW-124	Grab	GW		4/25/17	1620	10	X	X	X	X	X	X	X				19
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: SS Soil GW Groundwater WW WasteWater DW Drinking Water OT Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___

Flow ___ Other ___

Chain of Custody

ESC

L# L905300

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Hold #

Condition: (lab use only)

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwl

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___

Temp: 1.3 °C Bottles Received: 231

Date: 4-27-17 Time: 900

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: EP Spring 2017

City/State Collected: NM

Phone: 512-684-3170

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: EP (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 5 of 20

ESC LABORATORIES

L# L905300

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 13	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
DUP-EP-01	Grab	GW		4/25/17	1000	10	X	X	X	X	X	X	X			20
~~DUP-EP-02~~	Grab	GW					X	X	X	X	X	X	X			
~~DUP-EP-03~~	Grab	GW					X	X	X	X	X	X	X			
EB-EP-01	Grab	GW		4/25/17	1505	10	X	X	X	X	X	X	X			21
EB-EP-02	Grab	GW		4/25/17	1640	10	X	X	X	X	X	X	X			22
EB-EP-03	Grab	GW		4/25/17	1250	10	X	X	X	X	X	X	X			23
~~EB-EP-04~~	Grab	GW					X	X	X	X	X	X	X			
~~Trip Blank-EP-01~~	Grab	GW					X									
Trip Blank-EP-02	Grab	GW		4/25/17	—	1	X									24
~~Trip Blank-EP-03~~	Grab	GW					X									

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mark

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐

Temp: 14 °C Bottles Received: 231

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: NCF:

TAB 4

Page 6 of 20

Chain of Custody

ESC

L# 190530 2

G137

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcsolutions.com

Project Description: **NCL Spring 2017**

City/State Collected: NM

Phone: 512-684-3170 Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: NCL (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2/NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide 7 12
~~MW-56~~	Grab	GW					X	X		X	X	X	X		
MW-45	Grab	GW		4/25/17	1820	9	X	X			X	X	X	X	X
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													

Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Remarks/Contaminant | Sample # (lab only)
-01

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

7283 8527 4092

7283 8527 4107

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___
Temp: 4.6 °C Bottles Received: 52
Date: 4-27-17 Time: 900

Condition: (lab use only) OK
COC Seal Intact: ___Y ___N ___NA
pH Checked: C2,7D NCF:

2

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: NCL Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 7 of 20

ESC LABORATORIES

Lab # 1905302

Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
~~NCL-34A~~	Grab	GW					X	X		X	X	X	X			
~~NCL-33~~	Grab	GW					X	X		X	X	X	X			
~~NCL-44~~	Grab	GW					X	X		X	X	X	X			
~~NCL-32~~	Grab	GW					X	X		X	X	X	X			
~~MW-108~~	Grab	GW					X	X		X	X	X	X			
~~NCL-31~~	Grab	GW					X	X		X	X	X	X			
~~MW-55~~	Grab	GW					X	X	X		X	X	X	X	X	
~~MW-19~~	Grab	GW					X	X			X	X	X	X	X	
MW-54A	Grab	GW		4/25/17	1115	8	X	X		X	X	X	X			-02
MW-54B	Grab	GW		4/25/17	1035	10	X	X	X	X	X	X	X			-03

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished By : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 4.5 °C Bottles Received: 52
Date: 4-27-17 Time: 900

Condition: (lab use only) OK
COC Seal Intact: ✓ Y ___ N ___ NA
pH Checked: C2/T2 NCF:

9

COC 4

Page 8 of 20

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: speer@trcsolutions.com

Project Description: NCL Spring 2017

City/State Collected: NM

Phone: 512-684-3170
Fax

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: NCL (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905302

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Sample Comments	Sample # (lab only)
NCL-49	Grab	GW		4/25/17	905 ~~945~~	3	X	X		X	X	X	X				-04
MW-53	Grab	GW		4/25/17	905	3	X	X		X	X	X	X				-05
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: LB °C Bottles Received: 52

Date: 4-27-17 Time: 900

Condition: (lab use only) ok

COC Seal Intact: N Y ___ N ___ NA

pH Checked: ___ NCF: ___

10

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: **NCL Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 9 of 20

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905302
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) C2	Anions	NO2NO3, TDS C7	Long List Metals (Total & Dissolved)	Cyanide	Remk/Containers	Sample # (lab only)
DUP-NCL-01	Grab	GW		4/25/17	900	2	X	X		X	X	X	X				-06
~~EB-NCL-01~~	Grab	GW					X	X		X	X	X	X				
~~Trip Blank-NCL-01~~	Grab	GW				1	X										-07
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___
Temp: 1.5 °C Bottles Received: 52
Date: 4-27-17 Time: 900

Condition: (lab use only) OK
COC Seal Intact: ✓Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide
~~RW-12R~~	Grab	GW					X	X		X	X	X	X		
~~MW-113~~	Grab	GW					X	X	X	X	X	X	X		
KWB-8	Grab	GW		4/25/17	1735	9	X	X			X	X	X	X	X
~~RW-22~~	Grab	GW					X	X		X	X	X	X		
~~RW-20A~~	Grab	GW					X	X		X	X	X	X		
~~RW-20B~~	Grab	GW					X	X		X	X	X	X		
~~RW-13R~~	Grab	GW					X	X		X	X	X	X		
~~RW-14R~~	Grab	GW					X	X		X	X	X	X		
~~MW-133~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-134~~	Grab	GW					X	X	X	X	X	X	X		

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: Dissolved metals field-filtered. 7285 8327 4173, 4057

pH ___ Temp ___
Flow ___ Other ___

Analysis / Container / Preservative

Chain of Custody Page 10 of 20

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1905307
G138

Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample # (lab only) | Sample # (lab only)
- 01

7285 8327 3540

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mark

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 1.3 °C Bottles Received: 3124TB
Date: 4-27-17 Time: 900

Hold #
Condition: (lab use only)
COC Seal Intact: ✓ Y ___ N ___ NA
pH Checked: C2, 7/2 NCF:

Pg 2

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

ESC LABORATORIES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905307
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remarks/Containment	Sample # (lab only)
~~RA-4798~~	Grab	GW					X				X	X	X				
~~RA-4196~~	Grab	GW					X				X	X	X				
~~RA-3456~~	Grab	GW					X				X	X	X				
~~RA-313~~	Grab	GW					X				X	X	X				
KWB-7	Grab	GW		4/25/17	1820	9	X	X			X	X	X	X	X		-02
~~MW-135~~	Grab	GW					X	X	X	X	X	X	X				
KWB-11A	Grab	GW		4/25/17	1910	10	X	X	X		X	X	X	X	X		-03
KWB-11B	Grab	GW		4/25/17	2000	11	X	X	X		X	X	X	X	X		-04
~~MW-115~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-114~~	Grab	GW					X	X	X	X	X	X	X				

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mark

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 1.5 °C Bottles Received: 3(2+1B)
Date: 4-27-17 Time: 900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: ___ NCF: ___

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report To: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

ESC LAB SCIENCES

L# L905807

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remk/Contaminant	Sample # (lab only)
~~MW-117~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-118~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-119~~	Grab	GW					X	X	X	X	X	X	X				
NP-5	Grab	GW		4/25/17	1410	8	X	X		X	X	X	X				-05
MW-136	Grab	GW		4/25/17	1320	11	X	X	X		X	X	X	X	X		-06
~~MW-126A~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-126B~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-127~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-129~~	Grab	GW					X	X	X	X	X	X	X				
RW-#18A	Grab	GW		4/25/17	1235	6	X			X	X	X	X				07

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 1.5 °C Bottles Received: 312-FTB

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: <2, 7-12 NCF:

23

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		
KWB-1A	Grab	GW		4/25/17	1115	9	X	X			X	X	X	X	X		08
KWB-1C	Grab	GW		4/25/17	1150	8	X	X		X	X	X	X				09
KWB-10R	Grab	GW		4/25/17	1030	8	X	X		X	X	X	X				10
~~MW-131~~	Grab	GW					X	X	X	X	X	X	X				
~~KWB-6~~	Grab	GW					X	X		X	X	X	X				
~~MW-111~~	Grab	GW					X	X	X	X	X	X	X				
~~KWB-6~~	Grab	GW					X	X		X	X	X	X				
~~MW-112~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-132~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-57~~	Grab	GW					X	X	X	X	X	X	X				

Analysis / Container / Preservative

Chain of Custody Page 13 of 20

ESC LAB SCIENCES

Lab #: L905307
Table #:
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample # (lab only)

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			MWL

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___
Temp: 1.3 °C Bottles Received: 312-HTB
Date: 4-27-17 Time: 900

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: C2,7I2 NCF:

21

GW 3

Page 14 of 20

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide 7/2
~~RW-#11-8~~	Grab	GW					X	X		X	X	X	X		
~~KWB-12A~~	Grab	GW					X	X	X		X	X	X	X	X
~~KWB-12B~~	Grab	GW					X	X	X		X	X	X	X	X
KWB-2R	Grab	GW		4/25/17	1715	8	X	X		X	X	X	X		
MW-58	Grab	GW		4/25/17	1630	9	X	X			X	X	X	X	X
~~KWB-13~~	Grab	GW					X	X			X	X	X	X	X
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													

Analysis / Container / Preservative

Chain of Custody

ESC LAB SCIENCES

L# L905307

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample # (lab only): 11, 12

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH ___ Temp ___

Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 1.6 °C Bottles Received: 312-TRB

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: L2, 7/2 NCF:

75

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: speer@trcwsolutions.com
Project Description: REST Spring 2017
City/State Collected: NM
Phone: 512-684-3170
Fax:
Client Project #
Lab Project #
Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027
Collected by (Signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 15 of 20

ESC LAB SCIENCES

L# L905307
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
MW-103	Grab	GW		4/25/17	1445	10	X	X	X	X	X	X	X			13
MW-104	Grab	GW		4/25/17	1535	10	X	X	X	X	X	X	X			N
MW-64	Grab	GW		4/25/17	1300	10	X	X	X	X	X	X	X			15
MW-65	Grab	GW		4/25/17	1350	10	X	X	X	X	X	X	X			16
~~RW-5R~~	Grab	GW					X	X		X	X	X	X			
~~MW-102~~	Grab	GW					X	X	X	X	X	X	X			
~~RW-4~~	Grab	GW					X	X		X	X	X	X			
~~RW-6~~	Grab	GW					X	X		X	X	X	X			
~~MW-99~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-66~~	Grab	GW					X	X	X		X	X	X	X	X	

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____
Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #
Condition: (lab use only)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwat

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 1.5 °C Bottles Received: 31+TB
Date: 4-27-17 Time: 900
COC Seal Intact: 1 Y ___ N ___ NA
pH Checked: L2, 212 NCF:

20

Page 16 of 20

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: speer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Sample # (lab only)
UG-2	Grab	GW		4/25/17	1210	11	X	X	X		X	X	X	X	X		17
UG-3R	Grab	GW		4/25/17	940	11	X	X	X		X	X	X	X	X		18
UG-1	Grab	GW		4/25/17	1120	11	X	X	X		X	X	X	X	X		19
UG-4	Grab	GW		4/25/17	1025	11	X	X	X		X	X	X	X	X		
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

Analysis / Container / Preservative

Chain of Custody

ESC LAB SCIENCES

L#: L905307

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Remarks: Dissolved metals field-filtered.

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 1.6 °C Bottles Received: 32 TB

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: 2, 7/2 NCF:

T28

Chain of Custody Page 17 of 20

ESC LAB SCIENCES

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # REST (Navajo - Artesia)	P.O. # 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	Rush? (Lab MUST Be Notified) ___ Same Day ....200% ___ Next Day ....100% ___ Two Day ....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 22	Anions	NO2NO3, TDS 22	Long List Metals (Total & Dissolved)	Cyanide 24
~~MW-101~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-105~~	Grab	GW					X	X	X	X	X	X	X		
~~RW-2~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-81~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-82~~	Grab	GW					X	X	X	X	X	X	X		
~~MW-93~~	Grab	GW					X	X	X	X	X	X	X		
MW-43	Grab	GW		4/25/17	1125	11	X	X	X		X	X	X	X	X
MW-137	Grab	GW		4/25/17	1325	11	X	X	X		X	X	X	X	X
MW-138	Grab	GW		4/25/17	1225	11	X	X	X		X	X	X	X	X
~~MW-23~~	Grab	GW					X	X	X	X	X	X	X		

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___

Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 1.3 °C Bottles Received: 32+TB

Date: 4-27-17 Time: 900

Hold #

Condition: (lab use only)

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: C2, 7I2 NCF:

Lab Comments:
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905307

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Remarks/Contaminant	Sample # (lab only)
	20
	21
	22

7.21

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 18 of 20

ESC LAB SCIENCES

Lab # L905307
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Sample # (lab only)
~~MW-39~~	Grab	GW					X	X	X	X	X	X	X				
MW-98	Grab	GW		4/25/17	1025	10	X	X	X	X	X	X	X				33
~~RW-10~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-40~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-41~~	Grab	GW					X	X	X	X	X	X	X				
~~RW-9~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-42~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-29~~	Grab	GW					X	X	X	X	X	X	X				
~~RW-#16B~~	Grab	GW					X	X		X	X	X	X				
MW-106	Grab	GW		4/25/17	925	10	X	X	X	X	X	X	X				2V

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #
Condition: (lab use only)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 1.6 °C Bottles Received: 30+TB
Date: 4-27-17 Time: 900

COC Seal Intact: ___ Y ___ N ___ NA
pH Checked: C2
NCF:

3

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody

ESC LAB SCIENCES

L# L905307
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
MW-50	Grab	GW		4/25/17	1200	8	X	X		X	X	X	X			25
~~MW-97~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-92~~	Grab	GW					X	X	X	X	X	X	X			
RW-1	Grab	GW		4/25/17	1305	10	X	X	X	X	X	X	X			26
MW-91	Grab	GW		4/25/17	1350	10	X	X	X	X	X	X	X			27
MW-90	Grab	GW		4/25/17	1430	10	X	X	X	X	X	X	X			28
MW-96	Grab	GW		4/25/17	1510	10	X	X	X	X	X	X	X			29
~~MW-94~~	Grab	GW					X	X	X	X	X	X	X			
~~RW-3~~	Grab	GW					X	X		X	X	X	X			
~~MW-97~~	Grab	GW					X	X	X		X	X	X	X	X	

MW 4-27-17

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 1.6 °C Bottles Received: 32 TB
Date: 4-27-17 Time: 900

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: L2 NCF:

Batch 5

Page 20 of 20

Company Name/Address:	Billing Information:	Analysis / Container / Preservative	Chain of Custody
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095		ESC

Report to:	Email To:
Julie Speer	jspeer@trcwsolutions.com

Project Description:	City/State Collected:
REST Spring 2017	NM

Phone:	Client Project #	Lab Project #
512-684-3170		

Collected by (print):	Site/Facility ID #	P.O. #
Scott Ude/HMI Team	REST (Navajo - Artesia)	107027

Collected by (signature):	Rush? (Lab MUST be Notified)	Date Results Needed
Scott Ude	Same Day 200% Next Day 100% Two Day 50% Three Day 25%	Email? No Yes FAX? No Yes

Immediately Packed on Ice N ___ Y ✓

Lab # L905307

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remarks/Contaminant	Sample # (lab only)
~~DUP-REST-01~~	Grab	GW					X	X	X	X	X	X	X				
DUP-REST-02	Grab	GW		4/25/17	1200	10	X	X	X	X	X	X	X				30
~~DUP-REST-03~~	Grab	GW					X	X	X	X	X	X	X				
~~DUP-REST-04~~	Grab	GW					X	X	X		X	X	X	X	X		
~~DUP-REST-05~~	Grab	GW					X	X	X		X	X	X	X	X		
~~EB-REST-01~~	Grab	GW					X	X	X	X	X	X	X				
EB-REST-02	Grab	GW		4/25/17	1550	10	X	X	X	X	X	X	X				31
~~EB-REST-03~~	Grab	GW					X	X	X	X	X	X	X				
~~EB-REST-04~~	Grab	GW					X	X	X		X	X	X	X	X		
~~EB-REST-05~~	Grab	GW					X	X	X		X	X	X	X	X		

* Matrix SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/26/17	0800	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 1.1 °C Bottles Received: 32-TTS

Date: 4-27-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address: **TRC Solutions - Austin, TX** **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	Billing Information: **Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **EP Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: EP (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Chain of Custody — Page 1 of 28

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905612
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
MW-6A	Grab	GW		4/26/17	1810	10	X	X	X	X	X	X	X				11
MW-6B	Grab	GW		4/26/17	1850	10	X	X	X	X	X	X	X				12
~~MW-85~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-86~~	Grab	GW					X	X	X		X	X	X	X	X		
MW-120	Grab	GW		4/26/17	1725	10	X	X	X	X	X	X	X				13
MW-121	Grab	GW		4/26/17	1640	|	X	X	X	X	X	X	X				N
MW-84	Grab	GW		4/26/17	1415	|	X	X	X	X	X	X	X				15
MW-122	Grab	GW		4/26/17	1555	|	X	X	X	X	X	X	X				16
MW-81	Grab	GW		4/26/17	1330	|	X	X	X	X	X	X	X				17
MW-80	Grab	GW		4/26/17	1245	|	X	X	X	X	X	X	X				18

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.** This COC represents shipment 2. (Field event is continuing)

pH ___ Temp ___
Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 2.6 °C Bottles Received: 35349 MW

Date: 4-28-17 Time: 800

Condition: (lab use only) OK
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: L2 NCF:

Chain of Custody

ESC LABORATORIES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1905562

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **EP Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: EP (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-79	Grab	GW		4/26/17	1155	10	X	X	X	X	X	X	X					19
~~MW-82~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-74~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-73~~	Grab	GW					X	X	X	X	X	X	X					
MW-2A	Grab	GW		4/26/17	1500	10	X	X	X	X	X	X	X					20
~~MW-72~~	Grab	GW					X	X	X	X	X	X	X					
~~OCD-6~~	Grab	GW					X	X	X	X	X	X	X					
~~OCD-7AR~~	Grab	GW					X	X	X	X	X	X	X					
~~OCD-7B~~	Grab	GW					X	X	X	X	X	X	X					
	Grab	GW																

Analysis / Container / Preservative

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			MW

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2-6 °C Bottles Received: 349

Date: 4-28-17 Time: 900

Condition: (lab use only) o

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: L2 NCF:

Page 3 of 38

Chain of Custody

ESC LABORATORIES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905562

G169

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **EP Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: EP (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
MW-76	Grab	GW		4/26/17	1640	10	X	X	X	X	X	X	X				-01
MW-77	Grab	GW		4/26/17	1725		X	X	X	X	X	X	X				02
MW-78	Grab	GW		4/26/17	1805		X	X	X	X	X	X	X				03
MW-75	Grab	GW		4/26/17	1850		X	X	X	X	X	X	X				04
MW-83	Grab	GW		4/26/17	1555		X	X	X	X	X	X	X				05
MW-3	Grab	GW		4/26/17	1455		X	X	X	X	X	X	X				06
MW-88	Grab	GW		4/26/17	1055		X	X	X	X	X	X	X				07
MW-22A	Grab	GW		4/26/17	1140		X	X	X	X	X	X	X				08
MW-22B	Grab	GW		4/26/17	1235		X	X	X	X	X	X	X				09
MW-10	Grab	GW		4/26/17	1320		X	X	X	X	X	X	X				10

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Hold #

Condition: (lab use only)

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___ MW

Temp: 2.4 °C Bottles Received: 35+349

Date: 4-28-17 Time: 9:00

COC Seal Intact: ___Y ___N ___NA

pH Checked: LZ NCF:

Chain of Custody

ESC LABORATORIES
YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905612

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **EP Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: EP (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-123	Grab	GW		4/26/17	1405	10	X	X	X	X	X	X	X					21
MW-4A	Grab	GW		4/26/17	925		X	X	X	X	X	X	X					22
MW-4B	Grab	GW		4/26/17	1010		X	X	X	X	X	X	X					23
~~MW-5A~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-5B~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-5C~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-7A~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-7B~~	Grab	GW					X	X	X	X	X	X	X					
~~OCD-8A~~	Grab	GW					X	X	X		X	X	X	X	X			
~~OCD-8B~~	Grab	GW					X	X	X	X	X	X	X					

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2.6 °C Bottles Received: 349

Date: 4-28-17 Time: 900

Condition: (lab use only) 0

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: C2 NCF:

Company Name/Address: **TRC Solutions - Austin, TX** **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	Billing Information: **Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **EP Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # EP (Navajo - Artesia)
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%

Lab Project #

P.O. # 107027

Date Results Needed

Email? ___No ✓Yes

FAX? ___No ___Yes

Chain of Custody Page 5 of 28

ESC LABORATORIES — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905562

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-1R	Grab	GW		4/26/17	1600	8	X	X		X	X	X	X					24
MW-15	Grab	GW		4/26/17	1650	10	X	X	X	X	X	X	X					25
OCD-1R	Grab	GW		4/26/17	1425		X	X	X	X	X	X	X					26
OCD-2A	Grab	GW		4/26/17	1340		X	X	X	X	X	X	X					27
OCD-3	Grab	GW		4/26/17	1250		X	X	X	X	X	X	X					28
OCD-4	Grab	GW		4/26/17	950		X	X	X	X	X	X	X					29
MW-11A	Grab	GW		4/26/17	1120		X	X	X	X	X	X	X					30
MW-11B	Grab	GW		4/26/17	1205		X	X	X	X	X	X	X					31
OCD-5	Grab	GW		4/26/17	1035		X	X	X	X	X	X	X					32
~~**MW-87**~~	Grab	GW					X	X	X	X	X	X	X					

Analysis / Container / Preservative

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2.6 °C Bottles Received: 349

Date: 4-28-17 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: C2 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **EP Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: EP (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody

ESC LABS
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905567
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
~~DUP-EP-01~~	Grab	GW					X	X	X	X	X	X	X					
DUP-EP-02	Grab	GW		4/26/17	900	10	X	X	X	X	X	X	X					33
DUP-EP-03	Grab	GW		4/26/17	1000	10	X	X	X	X	X	X	X					34
~~EB-EP-01~~	Grab	GW					X	X	X	X	X	X	X					
~~EB-EP-02~~	Grab	GW					X	X	X	X	X	X	X					
~~EB-EP-03~~	Grab	GW					X	X	X	X	X	X	X					
EB-EP-04	Grab	GW		4/26/17	1210	10	X	X	X	X	X	X	X					35
~~Trip Blank-EP-01~~	Grab	GW					X											
~~Trip Blank-EP-02~~	Grab	GW					X											
Trip Blank-EP-03	Grab	GW		4/26/17	—	1	X											36

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____
Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			MWE

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 34
Date: 4-28-17 Time: 900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: L2 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **NCL Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-56	Grab	GW		4/26/17	1425	8	X	X		X	X	X	X					-01
~~MW-45~~	Grab	GW					X	X			X	X	X	X	X			
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

Chain of Custody Page 7 of 28

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905651
B239

Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Condition: (lab use only)

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mark

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 2.4 °C Bottles Received: 30
Date: 4-28-17 Time: 845

COC Seal Intact: ✓ Y ___N ___NA
pH Checked: L2 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **NCL Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 8 of 28

ESC LABS
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1905151
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
NCL-34A	Grab	GW		4/26/17	1250	3	X	X		X	X	X	X				-04
NCL-33	Grab	GW		4/26/17	1210	3	X	X		X	X	X	X				
NCL-44	Grab	GW		4/26/17	1125	3	X	X		X	X	X	X				
NCL-32	Grab	GW		4/26/17	1035	3	X	X		X	X	X	X				
MW-108	Grab	GW		4/26/17	905	3	X	X		X	X	X	X				
NCL-31	Grab	GW		4/26/17	950	3	X	X		X	X	X	X				
~~MW-55~~	Grab	GW					X	X	X		X	X	X	X	X		
~~MW-18~~	Grab	GW					X	X			X	X	X	X	X		
~~MW-54A~~	Grab	GW					X	X		X	X	X	X				
~~MW-54B~~	Grab	GW					X	X	X	X	X	X	X				

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mark

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 38
Date: 4-28-17 Time: 845

Condition: (lab use only)
COC Seal Intact: ✓ ___Y ___N ___NA
pH Checked: L2 NCF:

Chain of Custody Page 9 of 28

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905651
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **NCL Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. # 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~DUP-NCL-01~~	Grab	GW					X	X		X	X	X	X				
EB-NCL-01	Grab	GW		4/26/17	1045	0	X	X		X	X	X	X				
~~Trip Blank-NCL-01~~	Grab	GW					X										
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwk

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 38
Date: 4-28-17 Time: 845

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: NCF:

Company Name/Address: **TRC Solutions - Austin, TX** 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Billing Information: **Accounts Payable** 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
RW-#15C	Grab	GW		4/26/17	1000	8	X	X		X	X	X	X					-01
MW-48	Grab	GW		4/26/17	915	10	X	X	X	X	X	X	X					02
MW-130	Grab	GW		4/26/17	1050	10	X	X	X	X	X	X	X					03
~~KWB-4~~	Grab	GW					X	X		X	X	X	X					
~~RW-19~~	Grab	GW					X	X		X	X	X	X					
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature) Scott Ude	Date: 4/27/17	Time: 0800	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 45

Date: 4.28-17 Time: 0900

Hold #

Condition: (lab use only)

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: <2 NCF:

Chain of Custody

ESC LABORATORY SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# ~~LO~~ L905668

Table # N/A/17

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Page 11 of 78

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day ....200% ___ Next Day ....100% ___ Two Day ....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
KWB-P4	Grab	GW		4/26/17	855	4	X	X									04
~~MW-52~~	Grab	GW					X	X	X		X	X	X	X	X		
~~MW-109~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-110~~	Grab	GW					X	X	X	X	X	X	X				
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Page 12 of 28

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem /Contaminant	Sample # (lab only)
~~RW-12R~~	Grab	GW					X	X		X	X	X	X					
~~MW-113~~	Grab	GW					X	X	X	X	X	X	X					
~~KWB-8~~	Grab	GW					X	X			X	X	X	X	X			
~~RW-22~~	Grab	GW					X	X		X	X	X	X					
~~RW-20A~~	Grab	GW					X	X		X	X	X	X					
~~RW-20B~~	Grab	GW					X	X		X	X	X	X					
~~RW-13R~~	Grab	GW					X	X		X	X	X	X					
~~RW-14R~~	Grab	GW					X	X		X	X	X	X					
~~MW-133~~	Grab	GW					X	X	X	X	X	X	X					
MW-134	Grab	GW		4/26/17	845	10	X	X	X	X	X	X	X					05

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks: **Dissolved metals field-filtered.**

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Chain of Custody

ESC LABORATORY SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Chain of Custody — ESC LABS — YOUR LAB OF CHOICE
12065 Lebanon Rd, Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
RA-4798	Grab	GW		4/26/17	925	5	X				X	X	X					06
RA-4196	Grab	GW		4/26/17	945	5	X				X	X	X					07
RA-3156	Grab	GW		4/26/17	1015	5	X				X	X	X					08
~~RA-313~~	Grab	GW					X				X	X	X					
~~KWB-7~~	Grab	GW					X	X			X	X	X	X	X			
MW-135	Grab	GW		4/26/17	1650	10	X	X	X	X	X	X	X					09
~~KWB-11A~~	Grab	GW					X	X	X		X	X	X	X	X			
~~KWB-11B~~	Grab	GW					X	X	X		X	X	X	X	X			
~~MW-115~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-114~~	Grab	GW					X	X	X	X	X	X	X					

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks: **Dissolved metals field-filtered.**

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 445

Date: Time:

Condition: (lab use only)

COC Seal Intact: ✓ ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Chain of Custody

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-117	Grab	GW		4/26/17	855	10	X	X	X	X	X	X	X					10
MW-118	Grab	GW		4/26/17	940	10	X	X	X	X	X	X	X					11
MW-119	Grab	GW		4/26/17	1025	10	X	X	X	X	X	X	X					12
~~NP-5~~	Grab	GW					X	X		X	X	X	X					
~~MW-136~~	Grab	GW					X	X	X		X	X	X	X	X			
~~MW-126A~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-126B~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-127~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-129~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-#18A~~	Grab	GW					X			X	X	X	X					

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Dave

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: NCF:

Chain of Custody

ESC LABS — YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905662

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # REST (Navajo - Artesia)	P.O. # 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day ..... 200% ___ Next Day ..... 100% ___ Two Day ..... 50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
~~KWB-1A~~	Grab	GW					X	X			X	X	X	X	X			
~~KWB-1C~~	Grab	GW					X	X		X	X	X	X					
~~KWB-10R~~	Grab	GW					X	X		X	X	X	X					
~~MW-131~~ ~~MW-131~~	Grab	GW					X	X	X	X	X	X	X					
KWB-5	Grab	GW		4/26/17	1640	8	X	X		X	X	X	X					13
MW-111	Grab	GW		4/26/17	1535	10	X	X	X	X	X	X	X					14
KWB-6	Grab	GW		4/26/17	1435	8	X	X		X	X	X	X					15
~~MW-112~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-132~~	Grab	GW					X	X	X	X	X	X	X					
MW-57	Grab	GW		4/26/17	1345	10	X	X	X	X	X	X	X					16

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other _____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Chain of Custody Page 16 of 38

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~RW-#11-0~~	Grab	GW					X	X		X	X	X	X				
KWB-12A	Grab	GW		4/26/17	1210	11	X	X	X		X	X	X	X	X		17
KWB-12B	Grab	GW		4/26/17	1250	11	X	X	X		X	X	X	X	X		18
~~KWB-2R~~	Grab	GW					X	X		X	X	X	X				
~~MW-58~~	Grab	GW					X	X			X	X	X	X	X		
KWB-13	Grab	GW		4/26/17	1120	11	X	X			X	X	X	X	X		19
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~MW-103~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-104~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-64~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-65~~	Grab	GW					X	X	X	X	X	X	X				
~~RW-5R~~	Grab	GW					X	X		X	X	X	X				
MW-102	Grab	GW		4/26/17	925	10	X	X	X	X	X	X	X				20
RW-4	Grab	GW		4/26/17	1310	8	X	X		X	X	X	X				21
~~RW-6~~	Grab	GW					X	X		X	X	X	X				
MW-99	Grab	GW		4/26/17	1020	10	X	X	X	X	X	X	X				22
MW-66	Grab	GW		4/26/17	1115	11	X	X	X		X	X	X	X	X		23

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Chain of Custody

ESC LABS
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # 190668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Chain of Custody

ESC LABS — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
MW-28	Grab	GW		4/26/17	1210	11	X	X	X		X	X	X	X	X		24
~~**MW-59**~~	Grab	GW					X	X	X	X	X	X	X				
~~**MW-60**~~	Grab	GW					X	X	X		X	X	X	X	X		
MW-107	Grab	GW		4/26/17	1510	10	X	X	X	X	X	X	X				25
MW-128	Grab	GW		4/26/17	1410	10	X	X	X	X	X	X	X				26
MW-125	Grab	GW		4/26/17	1600	10	X	X	X	X	X	X	X				27
MW-116	Grab	GW		4/26/17	1655	10	X	X	X	X	X	X	X				28
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. # 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Chain of Custody — ESC LABS — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~MW-101~~	Grab	GW					X	X	X	X	X	X	X				
MW-105	Grab	GW		4/26/17	825	10	X	X	X	X	X	X	X				29
RW-2	Grab	GW		4/26/17	1425	10	X	X	X	X	X	X	X				30
MW-61	Grab	GW		4/26/17	935	10	X	X	X	X	X	X	X				31
MW-62	Grab	GW		4/26/17	1020	10	X	X	X	X	X	X	X				32
MW-93	Grab	GW		4/26/17	1215	10	X	X	X	X	X	X	X				33
~~MW-43~~	Grab	GW					X	X	X		X	X	X	X	X		
~~MW-137~~	Grab	GW					X	X	X		X	X	X	X	X		
~~MW-138~~	Grab	GW					X	X	X		X	X	X	X	X		
MW-23	Grab	GW		4/26/17	1115	10	X	X	X	X	X	X	X				34

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 45
Date: 4.28.17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address: **TRC Solutions - Austin, TX** **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	Billing Information: **Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-39	Grab	GW		4/26/17	1920	10	X	X	X	X	X	X	X					35
~~MW-98~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-10~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-40~~	Grab	GW					X	X	X	X	X	X	X					
MW-41	Grab	GW		4/26/17	1825	10	X	X	X	X	X	X	X					36
~~RW-9~~	Grab	GW					X	X	X	X	X	X	X					
MW-42	Grab	GW		4/26/17	1625	10	X	X	X	X	X	X	X					37
MW-29	Grab	GW		4/26/17	1725	10	X	X	X	X	X	X	X					38
RW-#16B	Grab	GW		4/26/17	1525	8	X	X		X	X	X	X					39
~~MW-106~~	Grab	GW					X	X	X	X	X	X	X					

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature) Scott Ude	Date: 4/27/17	Time: 0800	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: REST (Navajo - Artesia)
P.O. # 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
~~MW-50~~	Grab	GW					X	X		X	X	X	X					
~~MW-97~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-92~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-1~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-91~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-90~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-96~~	Grab	GW					X	X	X	X	X	X	X					
MW-94	Grab	GW		4/26/17	1420	10	X	X	X	X	X	X	X					40
RW-8	Grab	GW		4/26/17	1505	8	X	X		X	X	X	X					
MW-67	Grab	GW		4/26/17	1615	11	X	X	X		X	X	X	X	X			41

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-95	Grab	GW		4/26/17	1710	10	X	X	X	X	X	X	X					42
RW-7	Grab	GW		4/26/17	1335	10	X	X	X	X	X	X	X					43
RW-#17A	Grab	GW		4/26/17	1755	10	X	X	X	X	X	X	X					44
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Hold #

Condition: (lab use only)

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address: **TRC Solutions - Austin, TX** **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	Billing Information: **Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # REST (Navajo - Artesia)	P.O. # 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Chain of Custody — ESC LABS — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~DUP-REST-01~~	Grab	GW					X	X	X	X	X	X	X				
~~DUP-REST-02~~	Grab	GW					X	X	X	X	X	X	X				
DUP-REST-03	Grab	GW		4/26/17	1200	10	X	X	X	X	X	X	X				45
~~DUP-REST-04~~	Grab	GW					X	X	X		X	X	X	X	X		
DUP-REST-05	Grab	GW		4/26/17	800	11	X	X	X		X	X	X	X	X		46
~~EB-REST-01~~	Grab	GW					X	X	X	X	X	X	X				
~~EB-REST-02~~	Grab	GW					X	X	X	X	X	X	X				
EB-REST-03	Grab	GW		4/26/17	855	10	X	X	X	X	X	X	X				47
~~EB-REST-04~~	Grab	GW					X	X	X		X	X	X	X	X		
EB-REST-05	Grab	GW		4/26/17	1305	11	X	X	X		X	X	X	X	X		48

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 45
Date: 4-20-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
~~Trip Blank-REST-01~~	Grab	GW					X										
Trip Blank-REST-02	Grab	GW		4/26/17	—	1	X										49
~~Trip Blank-REST-03~~	Grab	GW					X										
~~Trip Blank-REST-04~~	Grab	GW					X										
~~Trip Blank-REST-05~~	Grab	GW					X										
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 44 S
Date: 4.28.17 Time: 0900

Chain of Custody Page ___ of ___

ESC LABS
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **TMD Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: TMD (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-25	Grab	GW		4/26/17	1510	8	X	X		X	X	X	X					-01
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 9
Date: 4-28-17 Time: 845

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 190560Z
G170

Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Hold #
Condition: (lab use only) ok
COC Seal Intact: ✓Y ___N ___NA
pH Checked: <7 NCF:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **TMD Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: TMD (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905607
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 42	Anions	NO2NO3, TDS 42	Long List Metals (Total & Dissolved)	Cyanide 42	Rem./Contaminant	Sample # (lab only)
~~MW-20~~	Grab	GW			1230	5	X	X		X	X	X	X				
NP-1	Grab	GW		4/26/17	1820	5	X				X	X	X				05
NP-6	Grab	GW		4/26/17	1740	2	X										06
~~MW-8~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-21~~	Grab	GW					X	X	X	X	X	X	X				
MW-71	Grab	GW		4/26/17	1105	9	X	X			X	X	X	X	X		07
MW-68	Grab	GW		4/26/17	1155	8	X	X		X	X	X	X				08
MW-27	Grab	GW		4/26/17	1555	8	X	X		X	X	X	X				09
MW-89	Grab	GW		4/26/17	1455	8	X	X		X	X	X	X				10
MW-16	Grab	GW		4/26/17	1400	9	X	X		X	X	X	X				11

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			MWL

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 97
Date: 4-28-17 Time: 845

Condition: (lab use only) 0
COC Seal Intact: ___Y ___N ___NA
pH Checked: C2,7I2 NCF:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **TMD Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: TMD (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) L2	Anions	NO2NO3, TDS L2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-26	Grab	GW		4/26/17	1255	8	X	X		X	X	X	X					12
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mint

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ____

Temp: 2.6 °C Bottles Received: 9?

Date: 4-28-17 Time: 845

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 190607

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Hold #

Condition: (lab use only) a

COC Seal Intact: ___Y ___N ___NA

pH Checked: L2 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **TMD Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: TMD (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
Trip Blank-TMD-01	Grab	GW		4/26/17	—	1	X											14
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 97
Date: 4-28-17 Time: 845

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905602
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: NCL Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027
Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide 7/12
~~NCL-34A~~	Grab	GW					X	X		X	X	X	X		
~~NCL-33~~	Grab	GW					X	X		X	X	X	X		
~~NCL-44~~	Grab	GW					X	X		X	X	X	X		
~~NCL-32~~	Grab	GW					X	X		X	X	X	X		
~~MW-108~~	Grab	GW					X	X		X	X	X	X		
~~NCL-31~~	Grab	GW					X	X		X	X	X	X		
MW-55	Grab	GW		4/27/17	1000	11	X	X	X		X	X	X	X	X
MW-18	Grab	GW		4/27/17	915	11	X	X			X	X	X	X	X
~~MW-54A~~	Grab	GW					X	X		X	X	X	X		
~~MW-54B~~	Grab	GW					X	X	X	X	X	X	X		

Analysis / Container / Preservative

Chain of Custody Page 9 of 34

ESC LAB SCIENCES

L # 405651
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Remarks/Contaminant | Sample # (lab only)
-02
63

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Relinquished by: (Signature) Scott Ude | Date: 4/27/17 | Time: 1500 | Received by: (Signature)
Relinquished by: (Signature) | Date: | Time: | Received by: (Signature)
Relinquished by: (Signature) | Date: | Time: | Received for lab by: (Signature) MWL

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___
Temp: 2.1c °C Bottles Received: 38
Date: 4-28-17 Time: 845

Hold #
Condition: (lab use only)
COC Seal Intact: ✓ Y ___ N ___ NA
pH Checked: C2,7/12 NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: REST Spring 2017

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO_2NO_3, TDS	Long List Metals (Total & Dissolved)	Cyanide	
~~RW-#156~~	Grab	GW					X	X		X	X	X	X			
~~MW-48~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-130~~	Grab	GW					X	X	X	X	X	X	X			
~~KWB-4~~	Grab	GW					X	X		X	X	X	X			
~~RW-19~~	Grab	GW					X	X		X	X	X	X			
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 45
Date: 4-28-17 Time: 0900

Hold #
Condition: (lab use only)
COC Seal Intact: ___ Y ___ N ___ NA
pH Checked: NCF:

Chain of Custody Page 12 of 34

ESC

L # L905668

Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Remarks / Contaminant | Sample # (lab only)

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: **Julie Speer**

Email To: speer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: **NM**

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (Signature): Scott Ude

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Immediately Packed on Ice N ___ Y ✓

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Rush Contaminant	Sample # (lab only)
~~KWB-P4~~	Grab	GW					X	X									
MW-52	Grab	GW		4/27/17	855	11	X	X	X		X	X	X	X	X		50
MW-109	Grab	GW		4/27/17	940	10	X	X	X	X	X	X	X				51
MW-110	Grab	GW		4/27/17	1025	10	X	X	X	X	X	X	X				52
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature) Scott Ude — Date: 4/27/17 — Time: 1500
Relinquished by: (Signature) — Date: — Time:
Relinquished by: (Signature) — Date: — Time:

Received by: (Signature)
Received by: (Signature)
Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 45
Date: 4-28-17 Time: 0900

Hold #
Condition: (lab use only)
COC Seal Intact: ✓ Y ___ N ___ NA
pH Checked: NCF:

Chain of Custody Page 13 of 34

ESC LABORATORIES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668

Table #

Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM
Phone: 512-684-3170
Fax:
Client Project #
Lab Project #
Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027
Collected by (signature): Scott Ude
Immediately Packed on Ice: N ___ Y ✓
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 14 of 34

ESC LABORATORIES

Dallas Location
Mount Juliet, TN
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# LP056B

Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remk/Contaminant	Sample # (lab only)
RW-12R	Grab	GW		4/27/17	1230	8	X	X		X	X	X	X				53
MW-113	Grab	GW		4/27/17	910	10	X	X	X	X	X	X	X				54
~~KWB-8~~	Grab	GW					X	X			X	X	X	X	X		
~~RW-22~~	Grab	GW					X	X		X	X	X	X				
~~RW-20A~~	Grab	GW					X	X		X	X	X	X				
~~RW-20B~~	Grab	GW					X	X		X	X	X	X				
~~RW-13R~~	Grab	GW					X	X		X	X	X	X				
~~RW-14R~~	Grab	GW					X	X		X	X	X	X				
~~MW-133~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-134~~	Grab	GW					X	X	X	X	X	X	X				

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____
Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

Condition: (lab use only)
COC Seal Intact: ✓ Y ___ N ___ NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Immediately Packed on Ice N ___ Y ✓

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 15 of 34

ESC LAB SCIENCES

L# L905660

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remarks / Contaminant	Sample # (lab only)
~~RA-4798~~	Grab	GW					X				X	X	X				
~~RA-4196~~	Grab	GW					X				X	X	X				
~~RA-3156~~	Grab	GW					X				X	X	X				
RA-313	Grab	GW		4/27/17	930	5	X				X	X	X				
~~KWB-7~~	Grab	GW					X	X			X	X	X	X	X		55
~~MW-435~~	Grab	GW					X	X	X	X	X	X	X				
~~KWB-11A~~	Grab	GW					X	X	X		X	X	X	X	X		
~~KWB-11B~~	Grab	GW					X	X	X		X	X	X	X	X		
MW-115	Grab	GW		4/27/17	1040	10	X	X	X	X	X	X	X				56
MW-114	Grab	GW		4/27/17	1130	10	X	X	X	X	X	X	X				57

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: REST Spring 2017

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		
~~MW-117~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-118~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-119~~	Grab	GW					X	X	X	X	X	X	X				
~~NP-5~~	Grab	GW					X	X		X	X	X	X				
~~MW-136~~	Grab	GW					X	X	X		X	X	X	X	X		
MW-126A	Grab	GW		4/27/17	920	10	X	X	X	X	X	X	X				58
MW-126B	Grab	GW		4/27/17	1000	10	X	X	X	X	X	X	X				59
MW-127	Grab	GW		4/27/17	1050	10	X	X	X	X	X	X	X				60
MW-129	Grab	GW		4/27/17	1140	10	X	X	X	X	X	X	X				61
~~RW-#16A~~	Grab	GW					X			X	X	X	X				

Analyses / Container / Preservative

Chain of Custody Page 16 of 34

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905663

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample # (lab only)

* Matrix: SS Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: Dissolved metals field-filtered.

pH ___ Temp ___

Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.9 °C Bottles Received: 445

Date: 4.28.17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 75%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	
~~KWB-TA~~	Grab	GW					X	X			X	X	X	X	X	
~~KWB-1C~~	Grab	GW					X	X		X	X	X	X			
~~KWB-10R~~	Grab	GW					X	X		X	X	X	X			
MW-131	Grab	GW		4/27/17	1110	10	X	X	X	X	X	X	X			
~~KWB-5~~	Grab	GW					X	X		X	X	X	X			
~~MW-111~~	Grab	GW					X	X	X	X	X	X	X			
~~KWB-9~~	Grab	GW					X	X		X	X	X	X			
~~MW-112~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-132~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-57~~	Grab	GW					X	X	X	X	X	X	X			

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 945
Date: 4-28-17 Time: 0900

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Chain of Custody Page 17 of 34

ESC

Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample # (lab only): 62

Page 18 of 34

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: REST Spring 2017

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO_2NO_3, TDS	Long List Metals (Total & Dissolved)	Cyanide
~~RW-#11-0~~	Grab	GW					X	X		X	X	X	X		
~~KWB-12A~~	Grab	GW					X	X	X		X	X	X	X	X
~~KWB-12B~~	Grab	GW					X	X	X		X	X	X	X	X
~~KWB-2R~~	Grab	GW					X	X		X	X	X	X		
~~MW-58~~	Grab	GW					X	X			X	X	X	X	X
~~KWB-13~~	Grab	GW					X	X			X	X	X	X	X
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													

Analysis / Container / Preservative

Chain of Custody

ESC LABORATORIES

L# L905608

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Remarks/Contaminant | Sample # (lab only)

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 44 S

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: speer@trcwsolutions.com

Project Description: REST Spring 2017

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 19 of 34

ESC LAB SCIENCES

L#: L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Remarks/Contaminant	Sample # (lab only)
~~MW-103~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-104~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-04~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-66~~	Grab	GW					X	X	X	X	X	X	X				
~~RW-5R~~	Grab	GW					X	X	X	X	X	X	X				
~~MW-102~~	Grab	GW					X	X		X	X	X	X				
~~RW-4~~	Grab	GW					X	X	X	X	X	X	X				
~~RW-6~~	Grab	GW					X	X		X	X	X	X				
~~MW-99~~	Grab	GW					X	X		X	X	X	X				
~~MW-68~~	Grab	GW					X	X	X	X	X	X	X				
	Grab	GW					X	X	X		X	X	X	X	X		

* Matrix: SS - Soil GW - Groundwater WW - WesteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 45

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice: N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

L # L905668

Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
~~MW-28~~	Grab	GW					X	X	X		X	X	X	X	X	
MW-59	Grab	GW		4/27/17	925	10	X	X	X	X	X	X	X			67
MW-60	Grab	GW		4/27/17	1015	11	X	X	X		X	X	X	X	X	68
~~MW-107~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-128~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-135~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-116~~	Grab	GW					X	X	X	X	X	X	X			
	Grab	GW														
	Grab	GW														
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ____

pH ____ Temp ____
Flow ____ Other ____

Remarks: **Dissolved metals field-filtered.**

Hold #
Condition: (lab use only)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____
Temp: 3.1 °C Bottles Received: 45
Date: 4-28-17 Time: 0900

COC Seal Intact: ___ Y ___ N ___ NA
pH Checked: NCF:

Page 21 of 34

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Collected by (signature): Scott Ude

Immediately Packed on Ice N ____ Y ✓

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	
~~UG-2~~	Grab	GW					X	X	X		X	X	X	X	X	
~~UG-3R~~	Grab	GW					X	X	X		X	X	X	X	X	
~~UG-1~~	Grab	GW					X	X	X		X	X	X	X	X	
~~UG-4~~	Grab	GW					X	X	X		X	X	X	X	X	
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														

Chain of Custody

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L903668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Rem. Contaminant | Sample # (lab only)

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ____

pH ____ Temp ____

Remarks: **Dissolved metals field-filtered.**

Flow ____ Other ____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____

Temp: 3.1 °C Bottles Received: 445

Date: 4.28.17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓Y ___N ___NA

pH Checked: NCF:

22 34

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

Company Name/Address: **TRC Solutions - Austin, TX** 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Billing Information: **Accounts Payable** 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **REST Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # REST (Navajo - Artesia)	P.O. # 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	*Rush?* (Lab MUST Be Notified) ___ Same Day ....200% ___ Next Day ....100% ___ Two Day ....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO_2NO_3, TDS	Long List Metals (Total & Dissolved)	Cyanide	
MW-101	Grab	GW		4/27/17	945	0	X	X	X	X	X	X	X			
~~MW-105~~	Grab	GW					X	X	X	X	X	X	X			
~~RW-2~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-61~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-62~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-93~~	Grab	GW					X	X	X	X	X	X	X			
~~MW-43~~	Grab	GW					X	X	X		X	X	X	X	X	
~~MW-137~~	Grab	GW					X	X	X		X	X	X	X	X	
~~MW-138~~	Grab	GW					X	X	X		X	X	X	X	X	
~~MW-23~~	Grab	GW					X	X	X	X	X	X	X			

Lab Use Only: Lab # L905663 | Table # | Acctnum: TRCATX | Template: | Prelogin: | TSR: Chris McCord | Cooler: | Shipped Via: | Sample # (lab only) -74

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___ Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___

Temp: 5.1 °C Bottles Received: 445

Date: 4.28.17 Time: 0900

Hold #

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

23 34

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095
Report To: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: REST Spring 2017	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): Scott Ude/HMI Team	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice: N ___ Y ✓	*Rush?* (Lab MUST Be Notified) ___ Same Day ....200% ___ Next Day ....100% ___ Two Day ....50% ___ Three Day 25%	Date Results Needed Email? ___ No ✓ Yes FAX? ___ No ___ Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO_2NO_3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
~~MW-39~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-88~~	Grab	GW					X	X	X	X	X	X	X					
RW-10	Grab	GW		4/27/17	955	10	X	X	X	X	X	X	X					65
MW-40	Grab	GW		4/27/17	1210	0	X	X	X	X	X	X	X					-75
~~MW-41~~	Grab	GW					X	X	X	X	X	X	X					
RW-9	Grab	GW		4/27/17	1115	0	X	X	X	X	X	X	X					-76
~~MW-42~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-29~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-#16B~~	Grab	GW					X	X		X	X	X	X					
~~MW-106~~	Grab	GW					X	X	X	X	X	X	X					

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 445

Date: 4-25-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Spring 2017
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): Scott Ude/HMI Team
Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027
Date Results Needed

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Cont./Containment	Sample # (lab only)
~~MW-30~~	Grab	GW					X	X		X	X	X	X					
~~MW-97~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-92~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-1~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-91~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-90~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-96~~	Grab	GW					X	X	X	X	X	X	X					
~~MW-94~~	Grab	GW					X	X	X	X	X	X	X					
~~RW-8~~	Grab	GW					X	X		X	X	X	X					
~~MW-67~~	Grab	GW					X	X	X		X	X	X	X	X			

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905668
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks: **Dissolved metals field-filtered.**

Hold #
Condition: (lab use only)

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___
Temp: 3.1 °C Bottles Received: 445
Date: 4-28-17 Time: 0900

COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature): Scott Ude

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Immediately Packed on Ice N ___ Y ✓

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905608

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide	Sample # (lab only)
~~MW-95~~	Grab	GW					X	X	X	X	X	X	X			
~~RW-1~~	Grab	GW					X	X	X	X	X	X	X			
~~RW-#17A~~	Grab	GW					X	X	X	X	X	X	X			
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1502	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 945

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcwsolutions.com

Project Description: **REST Spring 2017**

City/State Collected: NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: REST (Navajo - Artesia)

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ___ No ___ Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

L# L905663

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ctnrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (Lab only)
DUP-REST-01	Grab	GW		4/27/17	1000	10	X	X	X	X	X	X	X					66
~~DUP-REST-02~~	Grab	GW					X	X	X	X	X	X	X					
~~DUP-REST-03~~	Grab	GW					X	X	X	X	X	X	X					
DUP-REST-04	Grab	GW		4/27/17	800	11	X	X	X		X	X	X	X	X			67
~~DUP-REST-05~~	Grab	GW					X	X	X		X	X	X	X	X			
EB-REST-01	Grab	GW		4/27/17	935	10	X	X	X	X	X	X	X					68
~~EB-REST-02~~	Grab	GW					X	X	X	X	X	X	X					
~~EB-REST-03~~	Grab	GW					X	X	X	X	X	X	X					
EB-REST-04	Grab	GW		4/27/17	1030	11	X	X	X		X	X	X	X	X			69
~~EB-REST-05~~	Grab	GW					X	X	X		X	X	X	X	X			

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 445

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: **Julie Speer**

Email To: **jspeer@trcsolutions.com**

Project Description: **REST Spring 2017**

City/State Collected: **NM**

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #

Collected by (print): **Scott Ude/HMI Team**

Site/Facility ID #: **REST (Navajo - Artesia)**

P.O. # 107027

Collected by (signature): Scott Ude

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 35%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

L# L905668

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle)	Anions	NO2NO3, TDS	Long List Metals (Total & Dissolved)	Cyanide		Remarks/Containers	Sample # (lab only)
~~Trip Blank-REST-01~~	Grab	GW					X											
~~Trip Blank-REST-02~~	Grab	GW					X											
~~Trip Blank-REST-03~~	Grab	GW					X											
Trip Blank-REST-04	Grab	GW		4/27/17	—		X											70
~~Trip Blank-REST-05~~	Grab	GW					X											
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___

Remarks: **Dissolved metals field-filtered.**

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 745

Date: 4-28-17 Time: 0900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: **TEL Spring 2017**
City/State Collected: NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #

Collected by (print): **Scott Ude/HMI Team**
Site/Facility ID #: TEL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature): Scott Ude
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABS SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905645
B238
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
TEL-4	Grab	GW		4/27/17	1055	10	X	X	X	X	X	X	X				-01
TEL-3	Grab	GW		4/27/17	1150	10	X	X	X	X	X	X	X				02
TEL-2	Grab	GW		4/27/17	1045	10	X	X	X	X	X	X	X				03
TEL-1	Grab	GW		4/27/17	855	10	X	X	X	X	X	X	X				DV
MW-49	Grab	GW		4/27/17	1030	9	X	X	X		X	X	X	X	X		-08
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____
Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Matt

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Temp: 2.6 °C Bottles Received: 12
Date: 4-28-17 Time: 845

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: C2 NCF:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: **Julie Speer**	Email To: **jspeer@trcwsolutions.com**
Project Description: **TEL Spring 2017**	City/State Collected: **NM**
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID # **TEL (Navajo - Artesia)**	P.O. # **107027**
Collected by (signature): Scott Ude Immediately Packed on ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day ..... 200% ___ Next Day ..... 100% ___ Two Day ..... 50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905645
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: **Chris McCord**
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) C2	Anions	NO2NO3, TDS C2	Long List Metals (Total & Dissolved)	Cyanide	Rem./Contaminant	Sample # (lab only)
DUP-TEL-01	Grab	GW		4/27/17	1100	10	X	X	X	X	X	X	X				05
EB-TEL-01	Grab	GW		4/27/17	1205	10	X	X	X	X	X	X	X				06
Trip Blank-TEL-01	Grab	GW		4/27/17	—	1	X										07
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: **Dissolved metals field-filtered.**

pH ___ Temp ___
Flow ___ Other ___

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Mwt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: 2.4 °C Bottles Received: 61
Date: 4-28-17 Time: 845

Hold #
Condition: (lab use only) OK
COC Seal Intact: ___Y ___N ___NA
pH Checked: C2 NCF:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **TMD Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: TMD (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES — YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905607

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) 12	Anions	NO2NO3, TDS 12	Long List Metals (Total & Dissolved)	Cyanide 7 12		Rem./Contaminant	Sample # (lab only)
MW-20	Grab	GW		4/27/17	1020	8	X	X		X	X	X	X					02
~~NP-1~~	Grab	GW					X				X	X	X					
~~NP-6~~	Grab	GW					X											
MW-8	Grab	GW		4/27/17	1150	8	X	X	X	X	X	X	X					03
MW-21	Grab	GW		4/27/17	1105	8	X	X	X	X	X	X	X					04
~~MW-71~~	Grab	GW					X	X			X	X	X	X	X			
~~MW-68~~	Grab	GW					X	X		X	X	X	X					
~~MW-27~~	Grab	GW					X	X		X	X	X	X					
~~MW-89~~	Grab	GW					X	X		X	X	X	X					
~~MW-16~~	Grab	GW					X	X		X	X	X	X					

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Flow _____ Other _____

Remarks: **Dissolved metals field-filtered.**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Matt

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2.6 °C Bottles Received: 97

Date: 4-28-17 Time: 845

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: C2,712 NCF:

33 34

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX **505 E. Huntland Dr, Ste 250** **Austin, TX 78752**	**Accounts Payable** **21 Griffin Road North** **Windsor, CT 06095**
Report to: Julie Speer	Email To: jspeer@trcwsolutions.com
Project Description: **TMD Spring 2017**	City/State Collected: NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project #
Collected by (print): **Scott Ude/HMI Team**	Site/Facility ID #: TMD (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Scott Ude Immediately Packed on Ice N ___ Y ✓	***Rush?*** (Lab MUST Be Notified) ___ Same Day .....200% ___ Next Day .....100% ___ Two Day .....50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & Dissolved)	Cations (from "total metals" bottle) C2	Anions	NO2NO3, TDS C2	Long List Metals (Total & Dissolved)	Cyanide		Rem./Contaminant	Sample # (lab only)
MW-46R	Grab	GW		4/27/17	1140	8	X	X		X	X	X	X					13
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks: **Dissolved metals field-filtered.**

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	4/27/17	1500	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2-6 °C Bottles Received: 97

Date: 4-28-17 Time: 845

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L905602

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: **Chris McCord**

Cooler:

Shipped Via:

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Record of Climatological Observations

These data are quality controlled and may not be identical to the original observations.

Generated on 01/08/2018

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 3366 ft. Lat: 32.7547° N Lon: -104.3835° W

Station: **ARTESIA 6 S, NM US USC00290600**

Observation Time Temperature: 0730 Observation Time Precipitation: 0730

Year	Month	Day	Temperature (F)			Precipitation					Evaporation		Soil Temperature (F)					
			24 Hrs. Ending at Observation Time		At Observation	24 Hour Amounts Ending at Observation Time				At Obs. Time			4 in. Depth			8 in. Depth		
			Max.	Min.		Rain, Melted Snow, Etc. (in)	Flag	Snow, Ice Pellets, Hail (in)	Flag	Snow, Ice Pellets, Hail, Ice on Ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
2017	10	01	68	60	63	0.03		0.0		0		0.09	5	62	62			
2017	10	02	79	62	64	0.00		0.0		0		0.13	5	62	61			
2017	10	03	89	64	67	0.00		0.0		0		0.29	5	63	61			
2017	10	04	85	66	67	0.00		0.0		0		0.21	5	64	62			
2017	10	05	82	67	68	0.02		0.0		0		0.28	5	64	62			
2017	10	06	82	66	67	0.00		0.0		0		0.20	5	64	63			
2017	10	07	92	46	46	0.00		0.0		0		0.25	5	69	66			
2017	10	08	79	41	42	0.00		0.0		0		0.16	5	68	64			
2017	10	09	89	41	54	0.00		0.0		0		0.17	5	65	64			
2017	10	10	80	42	42	0.00		0.0		0		0.30	5	64	62			
2017	10	11	63	39	39	0.00		0.0		0		0.16	5	66	60			
2017	10	12	77	39	50	0.00		0.0		0		0.49	5	63	61			
2017	10	13	89	48	57	0.00		0.0		0		0.35	5	65	63			
2017	10	14	91	57	62	0.00		0.0		0		0.21	5	66	65			
2017	10	15	90	47	47	0.00		0.0		0		0.33	5	67	65			
2017	10	16	68	35	36	0.00		0.0		0		0.24	5	65	61			
2017	10	17	73	35	36	0.00		0.0		0		0.29	5	64	61			
2017	10	18	83	36	43	0.00		0.0		0		0.23	5	63	61			
2017	10	19	88	36	55	0.00		0.0		0		0.13	5	64	62			
2017	10	20	77	54	54	0.33		0.0		0		0.12	5	62	61			
2017	10	21	81	53	60	0.00		0.0		0		0.20	5	62	60			
2017	10	22	82	37	40	0.00		0.0		0		0.30	5	62	60			
2017	10	23	72	40	43	0.00		0.0		0		0.22	5	62	58			
2017	10	24	85	39	40	0.00		0.0		0		0.13	5	62	59			
2017	10	25	67	35	36	0.00		0.0		0		0.09	5	62	57			
2017	10	26	75	35	56	0.00		0.0		0		0.38	5	59	56			
2017	10	27	87	41	43	0.00		0.0		0		0.25	5	59	57			
2017	10	28	56	29	31	0.00		0.0		0		0.17	5	60	55			
2017	10	29	59	30	31	0.00		0.0		0		0.23	5	59	53			
2017	10	30	79	29	46	0.00		0.0		0		0.33	5	55	53			
2017	10	31	61	40	40	0.05		0.0		0		0.24	5	54	52			
		Summary	78	45		0.43		0.0										

Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests.

"T" values in the Precipitation or Snow category above indicate a "trace" value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

HMI
Groundwater

Hydrologic Monitoring
1654 W. Sam Houston Pkwy. N.
Houston, Texas 77043

Phone 713.464.5206
Fax 713.464.5207

October 9, 2017

Ms. Julie Speer, P.G., EIT
Associate Project Manager
TRC
505 East Huntland Drive, Suite 250
Austin, Texas 78752

Subject: October 2017 (Fall) Groundwater Monitoring
Sitewide Gauging, October 3, 2017
Groundwater Sampling, October 3-4, 2017
Navajo Refining Company, Artesia, New Mexico

Dear Ms. Speer:

This document summarizes groundwater monitoring field activities conducted by Hydrologic Monitoring, LLC (HMI) on behalf of TRC at the Navajo Refining Company, Artesia Refinery, Artesia, New Mexico.

Contents

Field Activities Narrative
Table 1: (Gauging Data, Groundwater Field Parameters, Well Inspections, with Analytical Program)
Groundwater Sampling SOP Memo
Groundwater Sampling Forms and Field Instrument Calibration Log
(provided in three emails, with wells in geographic-based order shown on Table 1)
Chain-of-Custody Forms (provided in one email)

Field Activities Narrative

1. HMI conducted the *October 2017 (Fall) Event* (including only the "SA" designation on the attached scoping table, Navajo Refinery, Artesia, New Mexico. Sitewide gauging was conducted October 3, 2017. Groundwater sampling (110 wells sampled) was conducted October 3-4, 2017. On 10-2-17, TRC notified HMI that five wells would change sampling frequency from semiannual to annual, effective 2H17 (MW-56, MW-77, MW-93, MW-107, and MW-129).

2. Groundwater sampling was conducted in accordance with the Site Sampling and Analysis Plan, EPA guidance, and the attached Memorandum - Low-Flow Groundwater Monitoring Standard

Operating Procedures, Navajo Refining Co. - Artesia, New Mexico. Per regulatory request, if measured LNAPL thickness was *less than* 0.03-feet, in any well scheduled for groundwater sampling, the LNAPL was removed, and the well was sampled. And if LNAPL thickness equaled 0.03-feet or *greater*, the well was not sampled. Gauging data, groundwater field parameters, and well inspection information is summarized in Table 1. Samples were shipped overnight FedEx to ESC Lab Sciences, Mt. Juliet, TN. The groundwater sampling process is documented on the attached groundwater sampling forms.

3. Field QA/QC Sampling (per Refinery Area):

Evaporation Ponds
Duplicates:
Dup-EP-01 at MW-7A
Dup-EP-02 at MW-22A
Dup-EP-03 at MW-3
Equipment Blanks:
EB-EP-01 collected over decontaminated gauging probe following sampling at MW-74
EB-EP-02 collected over decontaminated gauging probe following sampling at MW-124
EB-EP-03 collected over decontaminated gauging probe following sampling at MW-5A
EB-EP-04 collected over decontaminated gauging probe following sampling at MW-79
Trip Blank-EP-01
Trip Blank-EP-02
Trip Blank-EP-03

NCL
Duplicate:
Dup-NCL-01 at NCL-49
Equipment Blank:
EB-NCL-01 collected over decontaminated gauging probe following sampling at NCL-32
Trip Blank-NCL-01

TEL
Duplicate:
Dup-TEL-01 at TEL-4
Equipment Blank:
EB-TEL-01 collected over decontaminated gauging probe following sampling at TEL-3
Trip Blank-TEL-01

TMD
Trip Blank-TMD-01
Limited TMD scope generated no additional field QA/QC samples

REST ("rest" of the site)
Duplicates:
Dup-REST-01 at MW-113
Dup-REST-02 at MW-104
Dup-REST-03 at MW-134
Dup-REST-04 at MW-60
Dup-REST-05 at KWB-12B

Equipment Blanks:
EB-REST-01 collected over decontaminated gauging probe following sampling at MW-113

EB-REST-02 collected over decontaminated gauging probe following sampling at MW-104
EB-REST-03 collected over decontaminated gauging probe following sampling at MW-134
EB-REST-04 collected over decontaminated gauging probe following sampling at MW-60
EB-REST-05 collected over decontaminated gauging probe following sampling at KWB-12B
Trip Blank-REST-01
Trip Blank-REST-02
Trip Blank-REST-03
Trip Blank-REST-04

4. Site Notes:
   Beginning 2H17, "24HFNAV HOLLYFRONTIER SITE SPECIFIC ORIENTATION ARTESIA-NM" is taken at HASC annually, per Navajo. HMI team will get on a "December cycle", starting December 2017.
   HMI's DISA 2-yr backgound check/drug/alcohol requirements were approved by onsite safety-trailer personnel on 10-3-17, as reported through HASC system.
   Per Navajo, purgewater is disposed in the pad sump, just inside, and to the left of the Main Gate entrance. Alternately, North Bundle Pad sump, as previously (fenced area of drums, etc.), notifying FCC control room for entrance.
   Sitewide well and gate lock combinations are "2013" (less often "2002").
   With suggested telephone notification, FedEx pickup from locked shed (35-25-39 combination) at approximately 16:00 daily, across from Artesia Wool Co (access area from "inside" Refinery).
   North side of Hwy 82, east of site, gate with cable and combination lock (8810).
   POTW bldg, check-in as needed, to borrow a key or get gate unlocked.
   Navajo's Mr. Robert Combs or Richard Orosco for daily permits.
   Navajo-well locks have been fully-deployed as possible, as of 2H16.
   Well surface completion inspections are documented on respective well gauging and sampling forms (summarized in Table 1). Well inspection items of potential concern (i.e., "Issues") are highlighted in yellow-color in Table 1. HMI provided sitewide well completion photographs (every monitor/recovery well addressed during the biennial April 2017 event) to both TRC and Navajo.

HMI appreciates the opportunity to assist TRC with this project. If you have any questions or would like additional information please feel free to call us at 713.464.5206.

Sincerely,

HYDROLOGIC MONITORING

Scott C. Ude

Scott C. Ude, P.G.

The seal appearing on this document was authorized by Scott C. Ude, P.G. 353 on October 9, 2017.

Attachments

cc: Bryan Gilbert, P.G., TRC-Austin

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-6A	Monitoring	RLR		EP	3-Oct	16:00	NA	12.61	0.00	19.05										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-6B	Monitoring	RLR		EP	3-Oct	16:05	NA	12.48	0.00	52.27										Yes	Closure	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-85	Monitoring	RLR		EP	3-Oct	9:30	9.94	11.19	1.25	20.34			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-86	Monitoring	RLR		EP	3-Oct	9:40	9.69	10.03	0.34	19.21			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
MW-120	Monitoring	RLR	1	EP	3-Oct	10:30	NA	12.23	0.00	28.00	3-Oct	10:55	7.04	21.5	10,230	0.7	-203.1	2.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-121	Monitoring	RLR	2	EP	3-Oct	11:10	NA	12.21	0.00	27.32	3-Oct	11:35	7.08	23.2	6,480	1.0	-50.2	4.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-84	Monitoring	RLR	3	EP	3-Oct	6:50	NA	9.32	0.00	20.56	3-Oct	10:15	6.79	22.2	10,590	0.8	-181.5	2.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-122	Monitoring	RLR	4	EP	3-Oct	11:55	NA	10.40	0.00	23.31	3-Oct	12:30	7.08	22.0	6,900	0.7	-125.1	9.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-81	Monitoring	RLR		EP	3-Oct	12:50	NA	10.80	0.00	18.63										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-80	Monitoring	RLR		EP	3-Oct	12:55	NA	9.04	0.00	19.69										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-79	Monitoring	RLR	5	EP	3-Oct	15:15	NA	10.17	0.00	19.25	4-Oct	8:55	6.78	20.2	7,080	1.3	-43.8	4.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-82	Monitoring	RLR		EP	3-Oct	15:55	NA	9.71	0.00	20.00										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-74	Monitoring	RLR	6	EP	3-Oct	15:40	NA	9.57	0.00	20.19	4-Oct	11:25	6.86	21.6	11,350	1.0	28.9	3.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-73	Monitoring	RLR		EP	3-Oct	15:45	NA	10.82	0.00	19.60										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-2A	Monitoring	RLR	7	EP	3-Oct	13:15	NA	10.27	0.00	17.31	3-Oct	13:40	7.04	23.4	8,220	1.0	-88.6	4.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-2B	Monitoring	RLR		EP	3-Oct	14:05	NA	11.01	0.00	52.00			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
MW-72	Monitoring	RLR		EP	3-Oct	15:50	NA	7.70	0.00	13.92										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
OCD-6	Monitoring	RLR	8	EP	3-Oct	15:20	NA	10.28	0.00	26.91	4-Oct	9:55	6.89	20.4	15,150	0.9	-114.2	9.8	Clear	Yes	Closure	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-7AR	Monitoring	RLR	9	EP	3-Oct	15:25	NA	9.41	0.00	21.29	4-Oct	10:40	6.98	21.8	12,350	0.8	-156.7	2.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-7B	Monitoring	RLR		EP	3-Oct	15:30	NA	9.36	0.00	56.85										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-7C	Monitoring	RLR		EP	3-Oct	15:35	NA	9.19	0.00	71.95			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
RW-#15C [e]	Recovery [d]	RLR		REST	3-Oct	14:35	NA	14.19	0.00	22.30										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-48	Monitoring	RLR	10	REST	3-Oct	14:30	NA	16.30	0.00	32.00	4-Oct	12:25	6.65	24.3	3,960	1.5	-413.8	7.3	Clear	Yes	Yes	Issue	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-130	Monitoring	RLR	11	REST	3-Oct	14:40	NA	17.83	0.00	45.00	4-Oct	12:45	6.66	22.8	3,060	0.8	-78.9	6.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-4	Monitoring	RLR		REST	3-Oct	14:50	21.88	22.16	0.28	41.75			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-19	Recovery [d]	RLR		REST	3-Oct	14:45	22.10	22.26	0.16	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-76	Monitoring	SCD	12	EP	3-Oct	16:20	NA	11.15	0.00	20.33	3-Oct	16:45	6.76	22.8	6,400	1.3	-85.8	5.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-77	Monitoring	SCD		EP	3-Oct	17:05	NA	9.38	0.00	20.52										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-78	Monitoring	SCD		EP	3-Oct	17:10	NA	9.42	0.00	19.57										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-75	Monitoring	SCD	13	EP	3-Oct	17:20	NA	9.57	0.00	23.74	3-Oct	17:45	7.01	22.8	7,950	1.4	-94.9	6.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-83	Monitoring	SCD	14	EP	3-Oct	15:35	NA	9.41	0.00	19.91	3-Oct	16:00	6.84	23.0	5,470	1.2	-135.2	7.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-3	Monitoring	SCD	15	EP	3-Oct	14:50	NA	9.45	0.00	20.18	3-Oct	15:15	7.04	23.3	7,500	1.1	-28.1	6.5	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-88	Monitoring	SCD	16	EP	3-Oct	11:30	NA	9.17	0.00	20.31	3-Oct	11:55	7.16	21.8	6,300	1.1	-73.9	8.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-22A	Monitoring	SCD	17	EP	3-Oct	12:15	NA	8.38	0.00	22.65	3-Oct	12:40	6.95	22.8	7,540	1.3	-33.8	7.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-22B	Monitoring	SCD		EP	3-Oct	13:05	NA	8.20	0.00	54.66										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-10	Monitoring	SCD	18	EP	3-Oct	13:15	NA	5.93	0.00	18.45	3-Oct	13:40	6.87	21.9	6,420	1.7	-31.8	5.8	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-123	Monitoring	SCD	19	EP	3-Oct	14:00	NA	6.34	0.00	25.71	3-Oct	14:25	6.98	21.6	6,780	1.4	-30.1	8.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-4A	Monitoring	SCD	20	EP	3-Oct	10:45	NA	12.11	0.00	>12.22	3-Oct	11:10	7.14	22.7	6,030	2.4	-174.5	7.9	Clear	Yes	Issue	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-4B	Monitoring	SCD		EP	3-Oct	10:40	NA	11.35	0.00	72.37										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-5A	Monitoring	SCD	21	EP	3-Oct	9:50	NA	8.94	0.00	20.15	3-Oct	10:15	7.05	21.9	9,380	1.1	-137.4	7.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-5B	Monitoring	SCD		EP	3-Oct	9:40	NA	8.85	0.00	53.54										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-5C	Monitoring	SCD		EP	3-Oct	9:45	NA	9.03	0.00	71.64										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-7A	Monitoring	SCD	22	EP	3-Oct	8:50	NA	7.96	0.00	17.25	3-Oct	9:15	7.16	21.3	9,220	1.2	-74.6	9.8	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-7B	Monitoring	SCD		EP	3-Oct	8:45	NA	9.27	0.00	52.56										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-8A	Monitoring	SCD	23	EP	3-Oct	7:45	NA	9.41	0.00	20.74	3-Oct	8:15	6.72	21.5	11,060	1.1	-143.3	7.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
OCD-8B	Monitoring	SCD		EP	3-Oct	8:35	NA	9.01	0.00	56.65										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
KWB-P4	Monitoring	BRH		REST																					B	B	B	-	B	-	-	-	-	-	-
MW-25	Monitoring	BRH		TMD	3-Oct	17:00	NA	13.92	0.00	28.18										Yes	Yes	Subsidence	Yes		SA	A	A	-	A	A	-	-	A	A	A
NP-8	Monitoring	BRH		TMD	3-Oct	17:05	NA	12.46	0.00	15.20			Not in sampling program							Issue	Issue	Yes	Yes		SA	Not in samp prgm; gauged to top of protective steel casing									
MW-1R	Monitoring	BRH		EP	3-Oct	17:10	NA	10.43	0.00	20.63										Yes	Issue	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-15	Monitoring	BRH		EP	3-Oct	17:15	NA	11.53	0.00	21.70										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
OCD-1R	Monitoring	BRH	24	EP	3-Oct	12:35	NA	11.70	0.00	23.89	3-Oct	13:00	7.17	22.3	10,070	0.6	-18.4	3.1	Clear	Yes	Issue	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
OCD-2A	Monitoring	BRH	25	EP	3-Oct	13:20	NA	11.61	0.00	27.58	3-Oct	16:40	7.47	22.4	6,890	0.6	-117.3	6.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
OCD-2B	Monitoring	BRH		EP	3-Oct	13:23	NA	11.44	0.00	50.39			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
OCD-3	Monitoring	BRH	26	EP	3-Oct	13:30	NA	12.29	0.00	25.48	3-Oct	15:25	7.24	22.0	7,990	0.8	-17.9	6.8	Clear	Yes	Issue	Pad destryd	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
OCD-4	Monitoring	BRH	27	EP	3-Oct	13:35	NA	11.57	0.00	25.42	3-Oct	14:50	7.13	22.3	14,610	0.5	-80.4	26.1	Clear	Yes	Yes	Subsidence	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-11A	Monitoring	BRH	28	EP	3-Oct	13:40	NA	6.23	0.00	22.01	3-Oct	16:00	6.79	22.6	27,500	0.6	-34.5	6.9	Clear	Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	SA	SA	SA
MW-11B	Monitoring	BRH		EP	3-Oct	13:43	NA	9.18	0.00	47.30										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
OCD-5	Monitoring	BRH	29	EP	3-Oct	13:50	NA	9.70	0.00	25.42	3-Oct	14:15	7.35	21.8	16,830	0.7	-105.8	42.1	Sl. Cloudy	Yes	Yes	Pad cracked	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-87	Monitoring	BRH	30	EP	3-Oct	9:10	NA	8.65	0.00	20.39	3-Oct	9:35	7.03	21.4	17,380	0.5	-113.6	1.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-18A	Monitoring	BRH	31	EP	3-Oct	10:00	NA	10.00	0.00	22.58	3-Oct	10:25	7.06	20.6	23,400	0.9	-90.3	1.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-18B	Monitoring	BRH		EP	3-Oct	9:58	NA	9.93	0.00	50.59										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
MW-18T	Monitoring	BRH		EP	3-Oct	9:55	NA	9.73	0.00	50.38			Not in sampling program							Issue	Issue	Issue	Yes		SA	Not in samp prgm; gauged to highest pointt of shattered PVC									
MW-70	Monitoring	BRH	32	EP	3-Oct	10:45	NA	8.29	0.00	22.05	3-Oct	11:10	7.11	21.7	6,930	0.8	-82.1	6.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	A	A	A
MW-124	Monitoring	BRH	33	EP	3-Oct	11:25	NA	8.96	0.00	22.01	3-Oct	11:50	6.94	21.7	12,780	0.9	-85.7	14.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-52	Monitoring	BRH	34	REST	3-Oct	19:20	NA	16.33	0.00	34.67	4-Oct	8:15	6.94	20.4	3,300	0.9	47.3	3.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-109	Monitoring	BRH	35	REST	3-Oct	19:24	NA	14.63	0.00	29.48	4-Oct	9:00	6.53	21.8	3,510	0.5	-361.9	6.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-110	Monitoring	BRH	36	REST	3-Oct	19:30	NA	13.26	0.00	29.74	4-Oct	9:45	6.98	21.4	2,160	0.5	-266.3	5.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-13	Monitoring	BRH		EP	3-Oct	17:55	NA	11.88	0.00	21.10			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-69	Monitoring	BRH		EP	3-Oct	17:50	NA	10.51	0.00	22.50			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-12	Monitoring	BRH		EP	3-Oct	18:10	NA	9.74	0.00	17.93			Not in sampling program							Yes	Yes	Yes	Yes		SA	No sampling due to location N. of river									
MW-24	Monitoring	BRH		EP	3-Oct	18:30	NA	11.48	0.00	23.51			Not in sampling program							Yes	Yes	Issue	Yes		SA	No sampling due to location E. of river									
MW-14	Monitoring	BRH		EP	3-Oct	18:35	NA	10.59	0.00	>11.93			Not in sampling program							Yes	Issue	Yes	Yes		SA	No sampling due to location N. of river									
RW-12	Recovery [d]	BTB		Field E of Refin	3-Oct		Not in gauging program						Not in sampling program												-	-	-	-	-	-	-	-	-	-	-
RW-12R	Recovery [d]	BTB		REST	3-Oct	10:48	NA	18.14	0.00	NM										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-113	Monitoring	BTB	37	REST	3-Oct	10:45	NA	18.44	0.00	37.80	4-Oct	11:40	6.81	21.1	2,610	1.8	-167.4	5.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-8	Monitoring	BTB	38	REST	3-Oct	10:40	16.65	16.66	0.01	35.80	3-Oct	16:40	6.79	26.1	3,418	0.7	-234.6	6.7	Clear	Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	-	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
RW-22	Recovery [d]	BTB		REST	3-Oct	10:37	16.88	17.31	0.43	NM			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-20A	Recovery [d]	BTB		REST	3-Oct	10:32	19.94	20.01	0.07	NM										NA	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-20B	Recovery [d]	BTB		REST	3-Oct	10:28	19.98	20.37	0.39	NM										NA	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-13	Recovery [d]	BTB		Field E of Refin	3-Oct		Not in gauging program						Not in sampling program											Y	-	-	-	-	-	-	-	-	-	-	-
RW-13R	Recovery [d]	BTB		REST	3-Oct	10:53	17.05	17.28	0.23	NM										Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-14	Recovery [d]	BTB		Field E of Refin	3-Oct		Not in gauging program						Not in sampling program											Y	-	-	-	-	-	-	-	-	-	-	-
RW-14R	Recovery [d]	BTB		REST	3-Oct	10:58	16.59	17.71	1.12	NM										Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-133	Monitoring	BTB		REST	3-Oct	11:02	16.89	17.16	0.27	37.64			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-134	Monitoring	BTB	39	REST	3-Oct	11:06	NA	16.52	0.00	32.95	4-Oct	11:10	6.76	19.2	5,277	1.1	67.7	3.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RA-4798	Irrigation	BTB	40	REST			Not in gauging program			NA	3-Oct	17:00	7.03	19.1	1,189	1.7	76.4	0.9	Clear	NA	NA	Yes	Yes		NA	SA	-	-	SA	-	-	-	SA	SA	SA
RA-4196	Irrigation	BTB	41	REST			Not in gauging program			NA	4-Oct	11:45	6.91	23.8	2,581	1.9	13.8	1.5	Clear	NA	NA	Yes	Yes		NA	SA	-	-	SA	-	-	-	SA	SA	SA
RA-1227	Irrigation	BTB		REST			Removed from program by Navajo, 4-13-15						Removed from program by Navajo, 4-13-15												NA	A [h]	-	-	A [h]	-	-	-	A [h]	A [h]	A [h]
RA-3156	Irrigation	BTB		REST			Not in gauging program			NA										NA	NA	NA	Yes		NA	A	-	-	A	-	-	-	A	A	A

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refinery Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
RA-313	Irrigation	BTB		REST			Not in gauging program			NA										NA	NA	NA	Yes		NA	A	-	-	A	-	-	-	A	A	A
KWB-7	Monitoring	BTB	42	REST	3-Oct	10:20	17.77	17.78	0.01	34.83	3-Oct	13:30	6.79	19.3	3,177	0.6	-101.7	6.9	Clear	Yes	Yes	Needs pad	Yes	Y	SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-135	Monitoring	BTB	43	REST	3-Oct	10:01	NA	26.35	0.00	65.55	3-Oct	15:50	6.68	19.0	6,639	2.5	124.6	41.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-20	Monitoring	BTB		TMD	3-Oct	11:18	NA	12.24	0.00	26.66										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
NP-3	Monitoring	BTB		TMD	3-Oct	11:11	NA	19.04	0.00	21.59			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-4	Monitoring	BTB		TMD	3-Oct	11:14	NA	25.10	0.00	36.98			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-2	Monitoring	BTB		TMD	3-Oct	11:23	NA	15.47	0.00	21.49			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
NP-1	Monitoring	BTB	44	TMD	3-Oct	11:27	NA	15.29	0.00	21.88	4-Oct	12:45	6.90	19.4	4,896	1.3	52.7	1.0	Clear	Yes	Yes	Yes	Yes		SA	SA	-	-	SA	-	-	-	A	A	A
NP-6	Monitoring	BTB		TMD	3-Oct	11:30	NA	11.33	0.00	20.35										Yes	Yes	Yes	Yes		SA	B	-	-	B	-	-	-	-	-	-
MW-8	Monitoring	BTB		TMD	3-Oct	11:41	NA	9.80	0.00	20.12										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-21	Monitoring	BTB	45	TMD	3-Oct	11:44	NA	11.13	0.00	25.12	4-Oct	12:45	7.11	21.2	5,230	1.4	-60.3	3.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-9	Monitoring	BTB		TMD	3-Oct	11:47	NA	10.21	0.00	20.19			Not in sampling program							Yes	Yes	Cracked pad	Yes		SA	Not in sampling program									
MW-71	Monitoring	BTB		TMD	3-Oct	11:35	NA	12.43	0.00	21.87										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-68	Monitoring	BTB		TMD	3-Oct	9:08	NA	15.81	0.00	26.52										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-27	Monitoring	BTB		TMD	3-Oct	9:20	NA	14.88	0.00	30.28										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-89	Monitoring	BTB		TMD	3-Oct	9:28	NA	8.33	0.00	20.28										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-16	Monitoring	BTB		TMD	3-Oct	9:40	NA	7.63	0.00	21.24										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-26	Monitoring	BTB		TMD	3-Oct	9:46	NA	9.38	0.00	27.58										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-11A	Monitoring	BTB	46	REST	3-Oct	10:10	NA	17.43	0.00	42.27	3-Oct	14:55	6.82	19.3	5,164	0.7	-95.4	2.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-11B	Monitoring	BTB	47	REST	3-Oct	10:15	NA	18.12	0.00	72.45	3-Oct	14:15	6.91	20.1	2,840	0.8	67.2	1.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-3AR	Monitoring	BTB		REST	3-Oct								Removed from program by Navajo, 4-13-15 (farmer Jack Joy, 575-365-6042)												SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-115	Monitoring	BTB	48	REST	3-Oct	17:45	NA	7.42	0.00	27.50	4-Oct	9:15	6.60	18.1	5,273	1.4	56.4	1.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-114	Monitoring	BTB	49	REST	3-Oct	17:50	NA	8.49	0.00	38.25	4-Oct	10:10	6.77	22.2	3,967	1.2	47.2	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-117	Monitoring	GDS	50	REST	3-Oct	18:10	NA	8.65	0.00	27.22	4-Oct	8:35	6.86	17.0	3,320	1.3	83.4	2.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-118	Monitoring	GDS	51	REST	3-Oct	18:16	NA	5.83	0.00	28.29	4-Oct	9:20	6.98	17.8	3,660	4.7	110.1	1.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
NP-9	Monitoring	GDS		TMD	3-Oct	18:20	NA	6.84	0.00	25.89			Not in sampling program							Yes	Issue	Issue	Yes		SA	Not in sampling program									
MW-119	Monitoring	GDS	52	REST	3-Oct	18:26	NA	10.69	0.00	28.11	4-Oct	10:05	6.76	19.7	3,620	1.8	100.5	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
NP-5	Monitoring	GDS		REST	3-Oct	10:20	NA	12.71	0.00	25.09										Yes	Yes	Yes	Yes		SA	B	B	-	B	B	-	-	B	B	B
MW-136	Monitoring	GDS	53	REST	3-Oct	10:29	NA	10.55	0.00	27.90	3-Oct	10:55	6.86	17.9	3,990	1.7	99.5	9.8	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-126A	Monitoring	GDS	54	REST	3-Oct	9:06	NA	15.67	0.00	37.51	3-Oct	16:25	6.90	20.2	2,530	1.8	-132.3	5.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refinery Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-126B	Monitoring	GDS	55	REST	3-Oct	9:09	NA	15.50	0.00	51.43	3-Oct	17:05	6.76	19.9	3,650	1.3	-12.3	5.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-127	Monitoring	GDS	56	REST	3-Oct	9:00	NA	18.95	0.00	53.21	3-Oct	17:45	6.79	20.1	2,430	1.4	-198.8	3.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-129	Monitoring	GDS		REST	3-Oct	8:48	20.48	20.49	0.01	53.08										Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
RW-#18A [e]	Recovery [d]	GDS		REST	3-Oct	12:48	NA	13.06	0.00	17.78										Yes	Yes	Yes	Yes		SA	A	-	-	A	A	-	-	A	A	A
KWB-1A	Monitoring	GDS	57	REST	3-Oct	12:05	NA	14.55	0.00	33.50	3-Oct	12:30	6.82	18.1	4,400	2.3	29.1	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
KWB-1B	Monitoring	GDS		REST	3-Oct	12:40	NA	16.25	0.00	33.92			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
KWB-1C	Monitoring	GDS		REST	3-Oct	12:43	NA	16.84	0.00	52.71										Yes	Yes	Yes	Yes		SA	B	B	-	B	B	-	-	B	B	B
KWB-10R	Monitoring	GDS	58	REST	3-Oct	11:20	NA	15.65	0.00	29.46	3-Oct	11:45	6.67	18.8	1,564	1.6	-124.2	2.6	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-131	Monitoring	GDS	59	REST	3-Oct	8:53	NA	21.59	0.00	53.35	4-Oct	12:25	6.63	19.3	1,853	1.3	-128.5	8.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-5	Monitoring	GDS	60	REST	3-Oct	8:42	NA	21.09	0.00	37.68	4-Oct	11:40	6.67	19.9	2,500	2.0	-107.9	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-111	Monitoring	GDS	61	REST	3-Oct	8:35	NA	21.79	0.00	40.83	4-Oct	10:55	6.68	20.2	2,540	2.0	-69.1	2.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
KWB-6	Monitoring	GDS	62	REST	3-Oct	9:21	NA	18.81	0.00	36.44	4-Oct	11:50	6.53	21.1	2,440	0.7	-314.7	2.9	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-112	Monitoring	GDS		REST	3-Oct	9:16	18.85	19.15	0.30	37.54			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-132	Monitoring	GDS		REST	3-Oct	9:30	16.46	16.51	0.05	42.66			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-57	Monitoring	GDS	63	REST	3-Oct	13:10	NA	15.88	0.00	34.32	3-Oct	13:35	6.89	19.2	4,520	1.7	81.1	2.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-#11-0 [e]	Recovery [d]	GDS		REST	3-Oct	13:45	NA	17.81	0.00	22.20										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-9	Monitoring	GDS		REST	3-Oct		Historically-obstructed @ 15.11'						Removed from program by Navajo, 4-26-16 (farmer Jack Joy, 575-365-6042)												SA [h]	A [h]	A [h]	-	A [h]	A [h]	A [h]	A [h]	A [h]	A [h]	A [h]
KWB-12A	Monitoring	GDS	64	REST	3-Oct	13:50	NA	18.48	0.00	25.03	3-Oct	14:15	6.90	19.2	3,180	3.5	84.8	2.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-12B	Monitoring	GDS	65	REST	3-Oct	14:35	NA	18.27	0.00	39.39	3-Oct	15:00	6.87	19.0	3,270	3.5	-40.0	1.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
KWB-2R	Monitoring	GDS	66	REST	3-Oct	9:53	NA	18.80	0.00	39.41	4-Oct	11:10	6.71	20.8	3,110	0.9	-347.2	1.3	Clear	Yes	Yes	Yes	Yes		SA [h]	SA [d, h]	SA [d, h]	-	SA [d, h]	SA [d, h]	-	-	SA [d, h]	SA [d, h]	SA [d, h]
MW-58	Monitoring	GDS	67	REST	3-Oct	10:00	NA	17.73	0.00	33.06	3-Oct	10:30	6.70	20.8	2,140	1.0	-298.8	8.9	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
KWB-13	Monitoring	GDS		REST	3-Oct	9:41	NA	21.20	0.00	33.10										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-103	Monitoring	SCU		REST	3-Oct	9:00	NA	17.00	0.00	25.22										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-104	Monitoring	SCU	68	REST	3-Oct	9:05	NA	16.10	0.00	21.97	3-Oct	9:30	6.69	23.9	1,491	0.9	-278.5	4.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-64	Monitoring	SCU	69	REST	3-Oct	10:05	NA	18.20	0.00	34.08	3-Oct	10:30	6.89	25.1	2,550	1.1	-268.0	4.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-65	Monitoring	SCU	70	REST	3-Oct	10:40	NA	13.95	0.00	28.78	3-Oct	11:10	6.64	26.7	2,170	1.0	-165.2	5.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-5	Recovery [d]	SCU		S Refinery			Not in gauging program						Not in sampling program										Y	-	-	-	-	-	-	-	-	-	-	-
RW-5R	Recovery [d]	SCU		REST	3-Oct	11:25	14.75	14.86	0.11	35.30										Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-102	Monitoring	SCU	71	REST	3-Oct	11:35	NA	14.12	0.00	26.45	3-Oct	12:00	6.79	25.2	2,380	1.2	-292.6	6.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-4	Recovery [d]	SCU		REST	3-Oct	12:20	NA	12.62	0.00	36.62										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
RW-6	Recovery [d]	SCU		REST	3-Oct	12:10	13.65	13.74	0.09	34.90										Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-99	Monitoring	SCU	72	REST	3-Oct	12:30	NA	15.47	0.00	27.80	3-Oct	13:00	6.68	25.2	2,230	1.3	-295.7	5.3	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-66	Monitoring	SCU	73	REST	3-Oct	13:15	NA	14.82	0.00	29.80	3-Oct	13:40	6.75	24.6	1,724	1.7	-179.1	24.8	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-28	Monitoring	SCU	74	REST	3-Oct	13:55	NA	20.74	0.00	34.55	3-Oct	14:20	6.60	27.3	3,080	2.2	-318.9	5.0	Clear	Yes	Issue	Issue	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-59	Monitoring	SCU		REST	3-Oct	15:15	NA	10.00	0.00	32.72										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-60	Monitoring	SCU	75	REST	3-Oct	15:20	NA	11.23	0.00	37.78	3-Oct	15:45	6.69	28.3	3,950	2.1	-301.3	3.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-107	Monitoring	SCU		REST	3-Oct	12:25	NA	11.68	0.00	19.05										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-128	Monitoring	SCU	76	REST	3-Oct	14:35	NA	14.01	0.00	35.35	3-Oct	15:00	6.67	24.9	2,000	1.6	-182.9	19.2	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-125	Monitoring	SCU	77	REST	3-Oct	16:20	NA	11.29	0.00	28.31	3-Oct	16:45	6.84	25.4	4,620	2.4	-146.2	5.7	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-116	Monitoring	SCU	78	REST	3-Oct	17:05	NA	8.13	0.00	27.63	3-Oct	17:30	6.94	21.0	3,710	1.5	21.4	24.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-46R	Monitoring	SCU	79	TMD	3-Oct	17:45	NA	5.18	0.00	19.36	3-Oct	18:10	6.83	24.9	4,110	1.4	-82.7	6.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
UG-3R	Monitoring	SCU		REST																					A	A	A	A	A	A	A	A	A	A	A
UG-4	Monitoring	SCU		REST																					A	A	A	A	A	A	A	A	A	A	A
UG-1	Monitoring	SCU		REST																					A	A	A	A	A	A	A	A	A	A	A
UG-2	Monitoring	SCU		REST																					A	A	A	A	A	A	A	A	A	A	A
MW-101	Monitoring	TAB	80	REST	3-Oct	12:40	NA	12.48	0.00	26.85	3-Oct	17:35	6.78	23.9	2,070	0.9	-170.7	0.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-105	Monitoring	TAB	81	REST	3-Oct	12:50	NA	9.26	0.00	17.20	4-Oct	8:25	6.99	23.8	1,731	0.8	-358.1	19.0	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-2	Recovery [d]	TAB		REST	3-Oct	13:00	NA	11.48	0.00	36.13										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-61	Monitoring	TAB	82	REST	3-Oct	13:10	NA	11.57	0.00	29.30	4-Oct	9:25	7.00	24.3	2,960	0.5	-363.9	2.2	Clear	Yes	Yes	Cracked pad	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-62	Monitoring	TAB	83	REST	3-Oct	13:20	NA	12.88	0.00	29.50	4-Oct	10:25	6.78	23.5	3,630	0.8	-369.0	3.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-93	Monitoring	TAB		REST	3-Oct	13:30	NA	7.37	0.00	20.23										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-43	Monitoring	TAB	84	REST	3-Oct	14:10	NA	9.75	0.00	19.67	4-Oct	9:40	7.18	22.6	4,530	1.1	-345.2	7.5	Clear	Yes	Issue	No pad	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-137	Monitoring	TAB	85	REST	3-Oct	14:00	NA	7.93	0.00	29.60	4-Oct	11:55	6.93	26.3	4,760	1.8	-373.5	7.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-138	Monitoring	TAB	86	REST	3-Oct	13:50	NA	9.49	0.00	24.81	4-Oct	11:10	6.89	29.2	2,890	1.0	-364.2	8.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-23	Monitoring	TAB	87	REST	3-Oct	13:40	NA	12.88	0.00	23.10	4-Oct	10:25	7.18	27.2	2,760	1.0	-347.0	8.9	Clear	Yes	Issue	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-4	Monitoring	TAB	88	TEL	3-Oct	9:00	NA	9.04	0.00	27.27	3-Oct	9:25	6.42	22.0	4,600	0.6	-187.3	7.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-3	Monitoring	TAB		TEL	3-Oct	9:40	8.79	8.84	0.05	27.19			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-2	Monitoring	TAB	89	TEL	3-Oct	10:10	NA	9.63	0.00	27.20	3-Oct	10:35	6.88	22.0	3,620	0.8	-312.7	1.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
TEL-1	Monitoring	TAB	90	TEL	3-Oct	11:00	NA	8.79	0.00	27.00	3-Oct	11:25	7.14	21.8	3,150	0.5	-319.2	2.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-39	Monitoring	TAB	91	REST	3-Oct	14:20	NA	9.31	0.00	25.44	4-Oct	8:55	7.27	21.7	3,890	1.2	-328.1	4.2	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]									
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
MW-98	Monitoring	TAB	92	REST	3-Oct	12:00	NA	8.73	0.00	25.60	3-Oct	12:25	6.90	24.2	3,200	0.7	-375.5	3.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-10	Recovery [d]	TAB		REST	3-Oct	14:30	NA	9.14	0.00	22.49										Yes	Yes	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-40	Monitoring	TAB		REST	3-Oct	14:42	NA	7.54	0.00	24.75										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-41	Monitoring	TAB		REST	3-Oct	14:45	NA	7.10	0.00	21.56										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
RW-9	Recovery [d]	TAB		REST	3-Oct	14:40	NA	9.44	0.00	21.83										Yes	Yes	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-42	Monitoring	TAB		REST	3-Oct	14:50	NA	9.86	0.00	24.32										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-29	Monitoring	TAB	93	REST	3-Oct	15:30	NA	11.65	0.00	22.00	3-Oct	15:55	7.07	23.0	3,520	0.6	-294.4	1.0	Clear	Yes	Yes	Issue	Yes		SA	SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
RW-#16B [e]	Recovery [d]	TAB		REST	3-Oct	15:00	NA	11.72	0.00	17.70										Yes	Yes	Issue	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-30	Monitoring	TAB		REST	3-Oct	15:20	NA	9.43	0.00	23.50			Not in sampling program							Yes	Yes	Yes	Yes		SA	Not in sampling program									
MW-56	Monitoring	TAB		NCL	3-Oct	15:10	NA	10.32	0.00	26.50										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
MW-49	Monitoring	TAB	94	TEL	3-Oct	12:35	NA	8.77	0.00	33.15	4-Oct	11:25	6.81	25.0	3,200	0.7	-356.6	0.6	Clear	Yes	Non-std	Bad Hinge	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
MW-106	Monitoring	TAB	95	REST	3-Oct	12:20	NA	6.97	0.00	22.80	4-Oct	12:45	6.72	26.2	3,510	0.8	-372.1	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-45	Monitoring	TAB	96	NCL	3-Oct	16:20	NA	4.63	0.00	15.05	3-Oct	16:45	7.06	23.4	4,790	1.3	-200.4	1.9	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	SA	SA	SA	SA	SA
MW-50	Monitoring	CJH	97	REST	3-Oct	10:00	NA	14.34	0.00	28.22	3-Oct	10:25	6.96	22.4	7,010	1.2	97.4	4.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-97	Monitoring	CJH		REST	3-Oct	10:45	9.45	10.29	0.84	21.20			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-92	Monitoring	CJH		REST	3-Oct	10:55	11.26	11.31	0.05	22.60			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-1	Recovery [d]	CJH		REST	3-Oct	11:03	NA	10.18	0.00	35.39										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-91	Monitoring	CJH	98	REST	3-Oct	11:15	NA	10.54	0.00	25.35	3-Oct	11:40	6.37	23.0	2,460	1.5	-376.5	7.8	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
MW-90	Monitoring	CJH	99	REST	3-Oct	11:55	NA	11.29	0.00	22.80	3-Oct	12:20	6.86	22.8	3,390	1.1	-354.0	8.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-96	Monitoring	CJH	100	REST	4-Oct	12:35	NA	10.93	0.00	25.57	4-Oct	8:50	6.71	21.8	2,110	1.9	-354.9	4.6	Clear	Yes	Closure	Issue	Yes		SA	SA	SA	SA	SA	SA	-	-	SA	SA	SA
MW-94	Monitoring	CJH		REST	3-Oct	12:45	11.73	11.80	0.07	23.45			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
RW-8	Recovery [d]	CJH		REST	3-Oct	12:53	10.70	10.74	0.04	37.22			No sampling (LNAPL 0.03' or greater)							Yes	Yes	Yes	Yes	Y	SA	A [d]	A [d]	-	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
MW-67	Monitoring	CJH	101	REST	3-Oct	13:00	NA	9.06	0.00	27.30	3-Oct	13:25	6.98	24.0	2,430	1.5	-358.1	6.3	Clear	Yes	Yes	Yes	Yes		SA	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]	SA [d]
MW-95	Monitoring	CJH		REST	3-Oct	13:40	NA	12.03	0.00	25.37										Yes	Yes	Yes	Yes		SA	A	A	A	A	A	-	-	A	A	A
RW-7	Recovery [d]	CJH		REST	3-Oct	13:49	NA	10.11	0.00	37.00										Yes	Yes	Yes	Yes		SA	A [d]	A [d]	A [d]	A [d]	A [d]	-	-	A [d]	A [d]	A [d]
NCL-34A	Monitoring	CJH	102	NCL	3-Oct	17:45	NA	9.51	0.00	19.31	4-Oct	9:30	6.66	22.5	1,923	1.6	-328.3	4.6	Clear	Issue	Yes	Yes	Yes		SA	SA [d]	SA [d]	-	SA [d]	SA [d]	-	-	SA [d]	SA [d]	SA [d]
NCL-33	Monitoring	CJH	103	NCL	3-Oct	17:10	NA	8.01	0.00	19.60	4-Oct	10:10	7.04	21.9	3,070	1.7	-219.7	7.3	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
NCL-44	Monitoring	CJH	104	NCL	3-Oct	16:30	NA	7.97	0.00	21.57	3-Oct	16:55	6.87	22.9	2,620	1.1	-237.6	4.4	Clear	Issue	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
NCL-32	Monitoring	CJH	105	NCL	3-Oct	15:40	NA	8.39	0.00	20.06	3-Oct	16:05	7.08	22.6	2,520	0.8	-131.7	13.0	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-108	Monitoring	CJH	106	NCL	3-Oct	14:05	NA	10.78	0.00	27.74	3-Oct	14:30	7.02	23.5	2,620	1.5	-362.1	8.5	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA

Table 1: Gauging Data, Groundwater Field Parameters and Well Inspections, 1H17

Navajo Refining Company - Artesia Refinery, Artesia, New Mexico

Well ID	Well Type	HMI Use	HMI Use (# Samp Wells)	Location	Gauge Date	Gauge Time	Hydrologic Monitoring-Collected Data (Gauging/Groundwater Field Parameter/Well Inspection)																PSH Expected? [b]	Gauging Frequency	Analytical Suite and Frequency [c]										
							Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	LNAPL Column (ft)	Total Depth (ft btoc)	Sample Date	Sample Time	pH (S.U.)	T (C)	Spec. Cond. (umho/cm)	D. O. (mg/l)	ORP (mg/l)	Turb. (NTU)	Water Clarity	Cap	Casing	Well Secured	Label			Purge Parameters	DRO	GRO	VOC	Metals (As, Ba, Cr, Fe, Pb, Mn, Se)	Metals (Hg, Ni, V, B, Cd, Co, U)	Cyanide	Cations/Anions	Nitrates / Nitrites as Nitrogen	TDS
NCL-31	Monitoring	CJH	107	NCL	3-Oct	14:50	NA	8.11	0.00	20.16	3-Oct	15:15	7.31	25.2	2,850	0.9	-218.0	4.2	Clear	Issue	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-19	Monitoring	CJH		NCL	3-Oct	15:30	NA	8.38	0.00	22.08			Not in sampling program							Yes	Issue	Issue	Yes		SA	Not in sampling program									
MW-55	Monitoring	CJH	108	NCL	3-Oct	17:27	NA	10.23	0.00	26.58	4-Oct	10:50	7.11	21.3	3,750	1.8	-235.2	7.4	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
RW-#17A [e]	Recovery [d]	CJH		REST	3-Oct	17:35	NA	10.06	0.00	16.02										Yes	Issue	Issue	Yes		SA	A	A	A	A	A	-	-	A	A	A
MW-18	Monitoring	CJH		NCL	3-Oct	17:18	NA	10.13	0.00	22.20										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	A	A	A	A	A
MW-54A	Monitoring	CJH	109	NCL	3-Oct	8:25	NA	10.83	0.00	31.30	3-Oct	8:50	6.51	21.6	2,180	1.4	76.3	5.1	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-54B	Monitoring	CJH		NCL	3-Oct	9:02	NA	10.93	0.00	46.80										Yes	Yes	Yes	Yes		SA	B	B	B	B	B	-	-	B	B	B
NCL-49	Monitoring	CJH	110	NCL	3-Oct	9:10	NA	15.08	0.00	32.18	3-Oct	9:35	6.96	21.5	3,070	1.5	80.9	4.6	Clear	Yes	Yes	Yes	Yes		SA	SA	SA	-	SA	SA	-	-	SA	SA	SA
MW-53	Monitoring	CJH		NCL	3-Oct	8:15	NA	9.25	0.00	23.60										Yes	Yes	Yes	Yes		SA	A	A	-	A	A	-	-	A	A	A
KWB-P3	Monitoring		Field E of Refinery				Not in gauging program						Not in sampling program												Not included in monitoring program due to distance from impacts										

Notes:

Abbreviations:

A = Annual (Mar/Apr event)
B = Biennial (starts Mar/Apr 2011)
BR = Bolton Road
DRO = Diesel Range Organics
E = East
EP = Evaporation Ponds
ft bgs = ft below ground surface
ft btoc = ft below top of casing
ft MSL = ft Mean Sea Level
GRO = Gasoline Range Organics
HR = Haldeman Road
in = inches
N = North
NA = Not accessible
NAPI = North API Separator
NCL = North Colony Landfarm
NE = Northeast
NW = Northwest
OCD = Oil Conservation District
PSH = Phase Separated Hydrocarbon
ROW = right of way
RR = Richey Road
S = South
SA = Semi-annual (Mar/Apr and Sep/Oct events)
SE = Southeast
SW = Southwest
TMD = Three Mile Ditch
TEL = Tetra Ethyl Lead Impoundment
UG = Upgradient
US285 = U.S. Highway 285
US82 = U.S. Highway 82
VOC = Volatile Organic Compounds
W = West
Y = Yes

Footnotes:

[a] Well const. info. provided where available. TOC & ground surface elevs relative to benchmark G-416. Total depth based on 4/2010 measurements.

[b] PSH was present during March 2012 gw monitoring event or a recovery pump is in place. Note that recovery wells are gauged at least monthly.

[c] Analytical Suite to include the following:

1. Purge parameters to be measured and recorded in the field will include pH, temp, spec. cond., diss. oxy., and oxidation-reduction potential.
2. DRO by Method 8015Mod.
3. GRO by Method 8015Mod.
4. VOCs by Method 8260, to include methyl tert butyl ether (MTBE).
5. Total metals by Method 6010/6020 and/or 7470. Specific metals shown in heading, abbreviations from periodic chart (incl B, Cd, Co, U, per 3-7-16 State request).
6. Dissolved metals - same list as total metals but only analyzed during April event (field filtered by HMI)
7. Cyanide by Method SM4500.
8. Cations/anions to include Calcium, Potassium, and Sodium by Method 6010 or 6020 and Sulfate, Chloride and Fluoride by Method 300.
9. Nitrates/Nitrites as Nitrogen by Method 300.
10. Total Dissolved Solids by Method 2540C.

"-" indicates parameter not required.

Note - samples will not be collected from any well where PSH is measured to be 0.03 feet thick or greater.

[d] Samples to be collected at frequency indicated only if <0.03 feet of PSH is present.

[e] Recovery trenches 11, 15, 16, 17 and 18 have multiple vertical "wells". Gauging & sampling points are: RW #11-0, RW #15C, RW #16B, RW #17A and RW #18A.

= Well with recently gauged LNAPL (light nonaqueous phase liquid)

HMI
Groundwater

Hydrologic Monitoring
1654 W. Sam Houston Pkwy. N.
Houston, Texas 77043

Phone 713.464.5206
Fax 713.464.5207

M E M O R A N D U M

Groundwater Monitoring Standard Operating Procedures
Navajo Refining LLC – Artesia, New Mexico

HMI conducts low-flow groundwater sampling in accordance with the site Sampling and Analysis Plan and EPA guidance (including Puls and Barcelona, 1996 EPA Guidance on Low-Flow Groundwater Sampling, and Yeskis & Zavala, 2002, EPA/542:S-02/00, Groundwater Sampling Guidelines for Superfund and RCRA Project Managers).

Groundwater Sampling Methodology

HMI conducts low-flow groundwater sampling using a peristaltic pump and dedicated polyethylene tubing at wells with requisite depths-to-water. At limited wells with depths-to-water greater than peristaltic range, low-flow groundwater sampling is conducted using dedicated or non-dedicated bladder pumps. Sample intakes are set at mid-screen, when possible (generally at least two feet from the base of the well). Sample intake depths are permanently marked, ensuring future sampling events consistently monitor the targeted water-bearing interval. During sampling with a peristaltic pump, the sample tube is attached to the pump using a one-foot section of dedicated, flexible silicone tubing (item #5703, Geotech Environmental Equipment, Inc.). A two-foot segment of polyethylene tubing connects the silicone tubing in the pump to the flow-through cell, using a disposable segment of silicone tubing. Purging commences through a sealed flow-through cell at EPA-recommended purge rates (generally 0.1 to 0.2 liters/minute), and well drawdown is monitored. Groundwater field parameter readings are measured at 0.5-liter intervals (generally the equivalent of one cell-volume "turnover"). Field parameters of pH, specific conductivity, temperature, dissolved oxygen, and oxidation-reduction potential are monitored inside the cell. Turbidity is monitored outside of the cell. Groundwater field instrumentation is calibrated daily, in accordance with manufacturer specifications (recorded on a field instrument calibration log). Purging continues until a requisite volume of groundwater is purged (generally a minimum of 3,000 ml or six flow-through cell volumes), and field parameters have stabilized in accordance with EPA guidance:

Water Quality Parameters (Stabilization Parameters in Accordance with EPA (2002), Groundwater Sampling Guidelines for Superfund and RCRA Project Managers, Yeskis & Zavala, EPA/542:S-02/001)

- pH +/- 0.1 units;
- Temperature -
- Conductivity +/- 3%
- Dissolved Oxygen +/- 0.3 mg/L
- ORP +/- 10%
- Turbidity 10%

Immediately prior to sampling, the input tubing to the flow-through cell is disconnected from the disposable silicone receiving tubing on the input barb on the flow-through cell, and groundwater samples are collected directly into lab-supplied containers. Groundwater samples are placed in iced coolers, and remain in HMI's custody until delivered to ESC Lab Sciences via FedEx-overnight. Peristaltic tubes and/or dedicated bladder pumps may be dedicated in respective wells. Alternatively, dedicated tubing may be retrieved, bagged, labeled, and stored in tubs maintained at HMI. Wells with very limited water column thicknesses may be sampled with disposable bailers. Grab samples are collected at active recovery wells and irrigation wells that are scheduled for sampling. The purging and sampling process is documented on groundwater sampling field forms.

Cross-Contamination Prevention Program

Dedicated peristaltic tubing and dedicated bladder pumps are used as possible, to minimize any potential cross-contamination issues during the groundwater monitoring process. Remaining non-dedicated equipment (e.g., electronic gauging probes or non-dedicated bladder pumps, etc.) is properly decontaminated prior to use and between wells. The decontamination procedure may include a combination of chemical and mechanical decontamination. For example, scrubbing with ethyl alcohol (isopropanol) as warranted, followed by scrubbing using an Alconox-water solution, and distilled water rinse. The decontamination procedure for non-dedicated bladder pumps consists of cycling an Alconox-water solution through the pump bladder. Distilled water is cycled through the pump bladder, followed by decontaminating the exterior body of the pump, using the methods outlined above.

HMI Deliverables

HMI provides thorough field documentation of performed groundwater monitoring activities with a deliverables package including a brief narrative, summary table (with gauging data, field parameters, well inspection data, and scheduled analytical scope), groundwater sampling forms, field instrument calibration log, and chain-of-custody forms (by Refinery "Area"), and a groundwater sampling SOP memo.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-6A (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1600	NA	12.61	0.0	19.05	14.05	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-6B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RLR

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1605	NA	12.48	0.0	52.27	47.27	Yes	Does not close completely	*Issue*	yes		Weather: Pt. Cloudy, 80's

Well Purging Record

* Casing lid does not close all the way *

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-85
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	930	9.94	11.19	1.25	20.34	NA	yes	yes	yes	yes		Weather: Cloudy; 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not	sampled	due to	presence			B) ded bladder pump
			2.0			of LNAPL	≥	0.03'			C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-85								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-86
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in ; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	940	9.69	10.03	0.34	19.21	NA	yes	yes	yes	yes		Weather: Cloudy ; 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5			Not sampled due to presence					B) ded bladder pump
			2.0			of LNAPL ≥ 0.03'					C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-86								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-120
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1030	NA	12.23	0.0	28.00	17.5	yes	yes	yes	yes		Weather: Cloudy; 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1035	12.36	0.5	7.13	22.1	10450	1.8	-185.2	4.0	clear	*Low-flow groundwater sample:*
	1038	12.37	1.0	7.09	21.8	10440	1.6	-191.6	3.8		(A) peristaltic pump w/ ded tubing
	1040	12.37	1.5	7.07	21.7	10400	1.3	-193.2	3.5		B) ded bladder pump
	1043	12.37	2.0	7.06	21.6	10360	1.2	-195.4	3.3		C) non-ded bladder pump; or
	1045	12.37	2.5	7.05	21.5	10280	1.0	-197.7	3.0		*Standard groundwater sample:*
	1048	12.37	3.0	7.05	21.5	10240	0.8	-199.1	2.9		D) bailer due to limited column; or
	1050	12.37	3.5	7.05	21.5	10230	0.7	-201.2	2.9		E) recovery well cycling sample
	1053	12.37	4.0	7.04	21.5	10230	0.7	-203.1	2.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1055	MW-120	12.37	7.04	21.5	10230	0.7	-203.1	2.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-121
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1110	NA	12.21	0.0	27.32	17.5	yes	yes	yes	yes		Weather: Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1115	12.32	0.5	7.17	23.1	7,380	2.3	-76.9	42.0	Sl. Cloudy w/	*Low-flow groundwater sample:*
	1118	12.36	1.0	7.13	23.2	6,930	2.0	-68.4	30.2	orange particles	(A) peristaltic pump w/ ded tubing
	1120	12.39	1.5	7.12	23.2	6,720	1.8	-62.1	18.9	↓	B) ded bladder pump
	1123	12.41	2.0	7.11	23.2	6,640	1.5	-59.1	10.1	Clear w/ orange	C) non-ded bladder pump; or
	1125	12.43	2.5	7.10	23.2	6,590	1.3	-57.7	6.7	particles	*Standard groundwater sample:*
	1128	12.45	3.0	7.09	23.2	6,520	1.1	-50.4	5.3		D) bailer due to limited column; or
	1130	12.47	3.5	7.08	23.2	6,500	1.0	-50.2	5.0		E) recovery well cycling sample
↓	1133	12.49	4.0	7.08	23.2	6,480	1.0	-50.2	4.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1135	MW-121	12.49	7.08	23.2	6,480	1.0	-50.2	4.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-84
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	950	NA	9.32	0.0	20.56	15.2	yes	yes	yes	yes		Weather: Cloudy; 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	955	9.41	0.5	6.53	22.3	10420	2.1	-150.6	3.4	Clear w/gold tint	*Low-flow groundwater sample:*
	958	9.45	1.0	6.62	22.3	10480	1.7	-158.2	3.2		(A) peristaltic pump w/ ded tubing
	1000	9.49	1.5	6.68	22.3	10510	1.4	-170.1	3.0		B) ded bladder pump
	1003	9.55	2.0	6.73	22.2	10550	1.1	-181.4	2.8		C) non-ded bladder pump; or
	1005	9.58	2.5	6.75	22.2	10560	1.0	-181.4	2.7		*Standard groundwater sample:*
	1008	9.60	3.0	6.77	22.2	10560	0.9	-181.3	2.6		D) bailer due to limited column; or
	1010	9.63	3.5	6.78	22.2	10570	0.9	-181.3	2.6		E) recovery well cycling sample
↓	1013	9.67	4.0	6.79	22.2	10590	0.8	-181.5	2.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1015	MW-84	9.67	6.79	22.2	10590	0.8	-181.5	2.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-122
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1155	NA	10.40	0.0	23.31	18.4	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1200	10.89	0.5	7.19	22.0	7,430	1.9	-166.4	86.0	Sl. Cloudy w/orange	*Low-flow groundwater sample:*
	1203	11.01	1.0	7.14	22.1	7,310	1.6	-158.5	66.3	particles	(A) peristaltic pump w/ ded tubing
	1205	11.13	1.5	7.11	22.1	7,150	1.2	-143.1	48.4	↓	B) ded bladder pump
	1208	11.24	2.0	7.09	22.1	7,030	0.9	-137.7	35.3	↓	C) non-ded bladder pump; or
	1210	11.35	2.5	7.09	22.1	7,000	0.8	-133.2	24.2	↓ Reduced purge	*Standard groundwater sample:*
	1215	11.39	3.0	7.08	22.0	6,950	0.7	-131.2	16.9	Clear w/ rate to 0.1	D) bailer due to limited column; or
	1220	11.42	3.5	7.08	22.0	6,910	0.7	-128.9	12.3	orange particles L/min	E) recovery well cycling sample
↓	1225	11.45	4.0	7.08	22.0	6,900	0.7	-125.1	9.2	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1230	MW-122	11.45	7.08	22.0	6,900	0.7	-125.1	9.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-81 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1250	NA	10.80	0.0	18.63	13.7	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-80 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

(4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1255	NA	9.04	0.0	19.69	14.7	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+EB-EP-04 (same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-79
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1515	NA	10.17	0.0	19.25	15.0	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's
10/4/17	830	NA	10.38	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	835	10.60	0.5	6.39	20.6	7,440	3.0	-28.1	9.0	Clear	*Low-flow groundwater sample:*
	838	10.65	1.0	6.48	20.4	7,400	2.6	-31.3	8.2		(A) peristaltic pump w/ ded tubing
	840	10.69	1.5	6.56	20.4	7,310	2.2	-35.6	7.3		B) ded bladder pump
	843	10.73	2.0	6.67	20.3	7,230	2.0	-37.2	6.5		C) non-ded bladder pump; or
	845	10.76	2.5	6.75	20.2	7,150	1.8	-39.0	5.8		*Standard groundwater sample:*
	848	10.80	3.0	6.77	20.2	7,120	1.4	-40.2	5.3		D) bailer due to limited column; or
	850	10.84	3.5	6.78	20.2	7,100	1.3	-41.9	4.8		E) recovery well cycling sample
	853	10.88	4.0	6.78	20.2	7,080	1.3	-43.8	4.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	855	MW-79	10.88	6.78	20.2	7,080	1.3	-43.8	4.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	910	EB-EP-04	NA							Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-82 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1555	NA	9.71	0.0	20.00	15.0	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+EB-EP-01 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-74
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1540	NA	9.57	0.0	20.19	14.8	yes	yes	yes	yes		Weather: Cloudy; 80's
10/4/17	1100	NA	9.60	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1105	9.70	0.5	6.93	22.0	11,500	2.5	13.2	6.8	Clear	*Low-flow groundwater sample:*
	1108	9.74	1.0	6.91	22.0	11,480	2.2	16.8	6.1		(A) peristaltic pump w/ ded tubing
	1110	9.75	1.5	6.90	21.9	11,460	1.7	19.2	5.8		B) ded bladder pump
	1113	9.75	2.0	6.89	21.9	11,440	1.4	21.3	4.9		C) non-ded bladder pump; or
	1115	9.75	2.5	6.87	21.8	11,420	1.2	23.2	3.9		*Standard groundwater sample:*
	1118	9.75	3.0	6.86	21.7	11,400	1.1	24.1	3.7		D) bailer due to limited column; or
	1120	9.75	3.5	6.86	21.6	11,380	1.0	26.2	3.5		E) recovery well cycling sample
	1123	9.75	4.0	6.86	21.6	11,350	1.0	28.9	3.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1125	MW-74	9.75	6.86	21.6	11,350	1.0	28.9	3.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1135	EB-EP-01	NA	→	→	→	→	→	→	Same as above	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ Trip Blank - EP-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-73 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1545	NA	10.82	0.0	19.60	14.6	yes	yes	yes	yes		Weather: Pt. Cloudy

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-2A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1315	NA	10.27	0.0	17.31	15.0	yes	yes	yes	yes		Weather: Pt. Cloudy

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1320	10.53	0.5	7.22	24.1	8,210	2.4	-149.4	22.4	Slightly cloudy w/	*Low-flow groundwater sample:*
|	1323	10.59	1.0	7.16	23.8	8,190	2.1	-140.1	14.3	small particles	Ⓐ peristaltic pump w/ ded tubing
|	1325	10.65	1.5	7.10	23.6	8,150	1.9	-132.8	10.8	↓	B) ded bladder pump
|	1328	10.68	2.0	7.09	23.5	8,130	1.7	-120.2	5.1	Clear w/ small	C) non-ded bladder pump; or
|	1330	10.72	2.5	7.06	23.5	8,160	1.2	-100.1	4.8	particles	*Standard groundwater sample:*
|	1333	10.76	3.0	7.05	23.4	8,180	1.1	-93.1	4.6	↓	D) bailer due to limited column; or
|	1335	10.79	3.5	7.04	23.4	8,210	1.0	-89.0	4.6		E) recovery well cycling sample
↓	1338	10.83	4.0	7.04	23.4	8,220	1.0	-88.6	4.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1340	MW-2A	10.83	7.04	23.4	8,220	1.0	-88.6	4.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

(Not in "Sampling" program)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-2B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1405	NA	11.01	0.0	52.00	No Sample	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-72 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: RCR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1550	NA	7.70	0.0	13.92	11.9	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 6
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1520	NA	10.28	0.0	26.91	21.6	yes	lid cannot	yes	yes	Cracked	Weather: Pt. Cloudy; 80's
10/4/17	930	NA	10.37	0.0				close properly			pad	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	935	10.63	0.5	6.91	21.9	14,470	2.3	-97.8	78.0	Slightly cloudy	*Low-flow groundwater sample:*
|	938	10.63	1.0	6.91	21.4	14,520	2.0	-99.2	53.6	w/ small particles	(A) peristaltic pump w/ ded tubing
|	940	10.63	1.5	6.91	21.0	14,680	1.7	-103.8	47.2	↓	B) ded bladder pump
|	943	10.63	2.0	6.90	20.8	14,800	1.4	-107.2	39.9	↓	C) non-ded bladder pump; or
|	945	10.63	2.5	6.90	20.6	14,940	1.1	-111.6	19.8	Clear w/ small	*Standard groundwater sample:*
|	948	10.63	3.0	6.89	20.4	15,010	1.0	-113.2	15.3	particles	D) bailer due to limited column; or
|	950	10.63	3.5	6.89	20.4	15,120	1.0	-113.8	11.2	↓	E) recovery well cycling sample
↓	953	10.63	4.0	6.89	20.4	15,150	0.9	-114.2	9.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	955	OCD-6	10.63	6.89	20.4	15,150	0.9	-114.2	9.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD- 7AR
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: RCR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1525	NA	9.41	0.0	21.29	16.0	yes	yes	yes	yes		Weather: PT. Cloudy; 80's
10/4/17	1015	NA	9.52	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1020	9.72	0.5	7.04	22.2	12,790	1.8	-130.8	7.8	Clear w/ orange particles	*Low-flow groundwater sample:*
|	1023	9.76	1.0	7.01	22.2	12,700	1.5	-138.2	7.0	|	(A) peristaltic pump w/ ded tubing
|	1025	9.80	1.5	7.00	22.1	12,620	1.2	-144.1	4.9	|	B) ded bladder pump
|	1028	9.83	2.0	6.99	22.0	12,530	1.0	-146.3	3.6	|	C) non-ded bladder pump; or
|	1030	9.87	2.5	6.99	21.9	12,460	0.9	-151.6	3.2	|	*Standard groundwater sample:*
|	1033	9.91	3.0	6.98	21.8	12,400	0.9	-153.2	3.0	|	D) bailer due to limited column; or
|	1035	9.95	3.5	6.98	21.8	12,380	0.8	-155.6	3.0	|	E) recovery well cycling sample
↓	1038	9.98	4.0	6.98	21.8	12,350	0.8	-156.7	2.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1040	OCD-7AR	9.98	6.98	21.8	12,350	0.8	-156.7	2.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 7B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in ; stickup) Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1530	NA	9.36	0.0	56.85	51.9	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-7C (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1535	NA	9.19	0.0	71.95	No Sample	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Tool Co. locks gate by 5:00 PM] (Bagged tube + tubing guidance aid when sampled)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#15C (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (Trench-related RW; below-grade vault)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1435	NA	14.19	0.0	22.30	20.0	Yes	Yes	Yes	Yes		Weather: Sl. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Tool co. locks gate by 5:00 PM]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-48
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; at-grade)

Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1430	NA	16.30	0.0	32.00	26.9	yes	yes	*issue*	yes		Weather: Pt. Cloudy 80's
10/4/17	1200	NA	16.38	0.0								

*needs new pad/at grade plate & canister installation

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1205	16.64	0.5	6.68	24.5	4,160	2.3	-403.1	9.2	Black tint/odor	*Low-flow groundwater sample:*
	1208	16.68	1.0	6.68	24.5	4,120	2.0	-406.2	8.6		(A) peristaltic pump w/ ded tubing
	1210	16.71	1.5	6.67	24.4	4,100	1.8	-408.1	8.2		B) ded bladder pump
	1213	16.71	2.0	6.67	24.4	4,050	1.7	-409.6	7.9		C) non-ded bladder pump; or
	1215	16.71	2.5	6.67	24.3	4,000	1.6	-410.8	7.6		*Standard groundwater sample:*
	1218	16.71	3.0	6.65	24.3	3990	1.5	-412.2	7.5		D) bailer due to limited column; or
	1220	16.71	3.5	6.65	24.3	3,970	1.5	-413.1	7.5		E) recovery well cycling sample
	1223	16.71	4.0	6.65	24.3	3,960	1.5	-413.8	7.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1225	MW-48	16.71	6.65	24.3	3,960	1.5	-413.8	7.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-130
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: RLR/BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1440	NA	17.83	0.0	45.00	37.4	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's
10-4-17	1220	NA	17.81	0.0	45.00	37.4						Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1225	17.86	0.5	7.03	24.0	2960	1.8	-76.7	16.8	clear	*Low-flow groundwater sample:*
	1228	17.86	1.0	6.89	23.6	3000	1.4	-78.1	12.1		(A) peristaltic pump w/ ded tubing
	1230	17.86	1.5	6.81	23.4	3020	1.2	-76.4	10.3		B) ded bladder pump
	1233	17.86	2.0	6.75	23.2	3030	1.0	-77.0	9.6		C) non-ded bladder pump; or
	1235	17.86	2.5	6.70	23.0	3040	0.9	-77.5	8.9		*Standard groundwater sample:*
	1238	17.86	3.0	6.68	22.9	3050	0.9	-78.2	7.4		D) bailer due to limited column; or
	1240	17.86	3.5	6.67	22.8	3050	0.8	-78.6	7.1		E) recovery well cycling sample
	1243	17.86	4.0	6.66	22.8	3060	0.8	-78.9	6.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	1245	MW-130	17.86	6.66	22.8	3060	0.8	-78.9	6.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-4
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in ; stickup)

Initials: RLR

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1450	21.88	22.16	0.28	41.75	31.7	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not sampled due to presence						B) ded bladder pump
			2.0		of LNAPL ≥ 0.03'						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
		KWB-4		Not	Sampled							Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Equipped as RW in above-grade vault]

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: RW-19 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest
(Gauge to top of 1-in galvanized pipe)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RLR

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1445	22.10	22.26	0.16	NM	10' off base	yes	yes	yes	yes		Weather: Pt. Cloudy; 80's
						as needed						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-76
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in ; stickup) Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1620	NA	11.15	0.0	20.33	16.0	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1625	11.20	0.5	6.98	23.6	6350	3.0	-85.1	9.9	Clear	*Low-flow groundwater sample:*
	1627	11.20	1.0	6.91	23.4	6370	2.3	-86.3	7.9		(A) peristaltic pump w/ ded tubing
	1630	11.20	1.5	6.86	23.1	6380	1.9	-86.9	7.5		B) ded bladder pump
	1632	11.20	2.0	6.82	22.9	6380	1.7	-87.5	6.8		C) non-ded bladder pump; or
	1635	11.20	2.5	6.79	22.8	6390	1.5	-87.9	6.3		*Standard groundwater sample:*
	1637	11.20	3.0	6.77	22.8	6390	1.4	-88.2	5.4		D) bailer due to limited column; or
	1640	11.20	3.5	6.76	22.8	6390	1.4	-88.6	5.2		E) recovery well cycling sample
↓	1642	11.20	4.0	6.76	22.8	6400	1.3	-85.8	5.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1645	MW-76	11.20	6.76	22.8	6400	1.3	-85.8	5.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					HNO_3	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-77
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Gauge only, per TRC 10/2/17
(4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1705	NA	9.38	0.0	20.52	15.2	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5			Gauge Only, per TRC					B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5					10/2/17			*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17		MW-77								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-78 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1710	NA	9.42	0.0	19.57	14.6	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-75
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: SCO

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1720	NA	9.57	0.0	23.74	18.4	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1725	9.60	0.5	7.23	24.4	7920	3.0	-85.2	10.1	clear; gold tint, odor	*Low-flow groundwater sample:*
	1727	9.60	1.0	7.14	23.6	7930	2.5	-87.1	9.2		(A) peristaltic pump w/ ded tubing
	1730	9.61	1.5	7.07	23.0	7930	2.1	-89.9	8.7		B) ded bladder pump
	1732	9.61	2.0	7.05	22.8	7940	1.8	-91.2	8.1		C) non-ded bladder pump; or
	1735	9.61	2.5	7.03	22.7	7940	1.6	-92.3	7.8		*Standard groundwater sample:*
	1737	9.61	3.0	7.02	22.7	7940	1.5	-93.9	7.3		D) bailer due to limited column; or
	1740	9.61	3.5	7.02	22.7	7950	1.5	-94.5	6.9		E) recovery well cycling sample
	1742	9.61	4.0	7.01	22.8	7950	1.4	-94.9	6.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1745	MW-75	9.61	7.01	22.8	7950	1.4	-94.9	6.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-83
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1535	NA	9.41	0.0	19.91	15.6	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1540	9.51	0.5	6.96	26.1	5160	2.8	-117.5	13.2	Clear w/ gold tint	*Low-flow groundwater sample:*
	1542	9.56	1.0	6.89	24.4	5340	2.0	-122.5	10.8		(A) peristaltic pump w/ ded tubing
	1545	9.58	1.5	6.87	23.7	5400	1.7	-125.5	9.1		B) ded bladder pump
	1547	9.60	2.0	6.86	23.2	5430	1.4	-127.3	8.6		C) non-ded bladder pump; or
	1550	9.61	2.5	6.85	23.1	5450	1.3	-129.9	8.3		*Standard groundwater sample:*
	1552	9.62	3.0	6.85	23.1	5460	1.2	-131.4	7.9		D) bailer due to limited column; or
	1555	9.62	3.5	6.84	23.0	5470	1.2	-133.8	7.5		E) recovery well cycling sample
↓	1557	9.62	4.0	6.84	23.0	5470	1.2	-135.2	7.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1600	MW-83	9.62	6.84	23.0	5470	1.2	-135.2	7.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+ DUP-EP-03 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-3
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1450	NA	9.45	0.0	20.18	16.1	Yes	Yes	Issue	Yes		Weather: Partly Cloudy 80's

Well Purging Record

No protective casing; Stainless steel well casing with locked expandable cap; probed for pad but not found

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1455	9.50	0.5	7.19	26.3	7310	2.5	-31.5	11.9	Clear	*Low-flow groundwater sample:*
↓	1457	9.53	1.0	7.12	25.0	7370	1.8	-30.9	10.5	↓	(A) peristaltic pump w/ ded tubing
↓	1500	9.54	1.5	7.09	24.0	7420	1.5	-29.8	8.8	↓	B) ded bladder pump
↓	1502	9.54	2.0	7.07	23.8	7450	1.3	-29.5	8.2	↓	C) non-ded bladder pump; or
↓	1505	9.54	2.5	7.05	23.5	7480	1.2	-29.1	7.9	↓	*Standard groundwater sample:*
↓	1507	9.54	3.0	7.04	23.4	7490	1.2	-28.7	7.4	↓	D) bailer due to limited column; or
↓	1510	9.54	3.5	7.04	23.4	7490	1.1	-28.2	6.9	↓	E) recovery well cycling sample
↓	1518	9.55	4.0	7.04	23.3	7500	1.1	-28.1	6.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1515	MW-3	9.55	7.04	23.3	7500	1.1	-28.1	6.5	DRO	HCL	8015M
↓										GRO	HCL	8015M
↓										VOC	HCL	8260
↓										Anions (Chloride,Fluoride,Sulfate)	Neat	300
↓										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
↓										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
↓										TDS	Neat	2540C
↓										***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
↓										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
↓										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1200	DUP-EP-03	9.55	7.04	23.3	7500	1.1	-28.1	6.5	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-88
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1130	NA	9.17	0.0	20.31	14.8	Yes	Yes	Yes	Yes	Hole in pad	Weather: Cloudy 70's

Well Purging Record

* Issue with pad; hole in west side of well pad; well remains functional

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1135	9.24	0.5	7.29	24.2	6140	2.7	-91.3	18.1	clear w/ orange particles	Low-flow groundwater sample:
	1137	9.25	1.0	7.25	22.5	6210	2.1	-87.5	14.2		(A) peristaltic pump w/ ded tubing
	1140	9.26	1.5	7.22	22.3	6240	1.7	-83.2	10.9		B) ded bladder pump
	1142	9.26	2.0	7.20	22.0	6260	1.5	-79.1	10.1		C) non-ded bladder pump; or
	1145	9.26	2.5	7.18	21.9	6280	1.3	-77.6	9.7		Standard groundwater sample:
	1147	9.26	3.0	7.17	21.9	6290	1.2	-75.3	9.2		D) bailer due to limited column; or
	1150	9.26	3.5	7.17	21.8	6300	1.2	-74.2	8.7		E) recovery well cycling sample
↓	1152	9.26	4.0	7.16	21.8	6300	1.1	-73.9	8.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1155	MW-88	9.26	7.16	21.8	6300	1.1	-73.9	8.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ DUP-EP-02 (same analysis)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-22A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1215	NA	8.38	0.0	22.65	17.4	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1220	8.45	0.5	7.29	24.7	7460	2.6	-13.5	13.5	clear w/ orange particles	*Low-flow groundwater sample:*
	1222	8.51	1.0	7.16	23.4	7510	1.9	-17.5	10.9		(A) peristaltic pump w/ ded tubing
	1225	8.54	1.5	7.08	23.0	7520	1.7	-22.1	10.1		B) ded bladder pump
	1227	8.57	2.0	7.03	22.9	7520	1.5	-25.6	9.7		C) non-ded bladder pump; or
	1230	8.59	2.5	6.98	22.9	7530	1.4	-27.9	8.6		*Standard groundwater sample:*
	1232	8.60	3.0	6.96	22.9	7540	1.4	-30.2	8.5		D) bailer due to limited column; or
	1235	8.61	3.5	6.95	22.8	7540	1.3	-32.3	8.1		E) recovery well cycling sample
	1237	8.61	4.0	6.95	22.8	7540	1.3	-33.8	7.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1240	MW-22A	8.61	6.95	22.8	7540	1.3	-33.8	7.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	SM4500
	1000	DUP-EP-02	8.61	6.95	22.8	7540	1.3	-33.8	7.5	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-22B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1305	NA	8.20	0.0	54.66	49.7	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

located 15 yds off of the left side of path (after the "S" turn)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-10
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCO

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1315	NA	5.93	0.0	18.45	13.3	Yes	Yes	Yes	Yes	cracked pad	Weather: Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1320	5.94	0.5	7.03	22.7	6260	2.5	-41.2	9.1	clear w/ small orange	*Low-flow groundwater sample:*
	1322	5.95	1.0	6.98	22.5	6300	2.0	-38.6	8.5	particles	(A) peristaltic pump w/ ded tubing
	1325	5.95	1.5	6.94	22.3	6330	1.9	-35.4	7.9		B) ded bladder pump
	1327	5.95	2.0	6.92	22.1	6370	1.8	-33.1	7.3		C) non-ded bladder pump; or
	1330	5.95	2.5	6.90	22.0	6396	1.8	-32.9	6.9		*Standard groundwater sample:*
	1332	5.95	3.0	6.89	21.9	6400	1.7	-32.5	6.4		D) bailer due to limited column; or
	1335	5.95	3.5	6.88	21.9	6410	1.7	-32.1	6.1		E) recovery well cycling sample
↓	1337	5.95	4.0	6.87	21.9	6420	1.7	-31.8	5.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1340	MW-10	5.95	6.87	21.9	6426	1.7	-31.8	5.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-123
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1400	NA	6.34	0.0	25.71	25.0	Yes	Yes	Yes	Yes		Weather: Partly Cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1405	6.35	0.5	7.14	23.0	6640	2.7	-68.3	18.5	Clear	*Low-flow groundwater sample:*
	1407	6.36	1.0	7.09	22.3	6690	2.3	-51.5	14.2		(A) peristaltic pump w/ ded tubing
	1410	6.36	1.5	7.05	21.6	6720	2.0	-45.2	12.9		B) ded bladder pump
	1412	6.36	2.0	7.02	21.5	6740	1.9	-40.7	10.8		C) non-ded bladder pump; or
	1415	6.36	2.5	7.00	21.5	6760	1.5	-38.6	9.7		*Standard groundwater sample:*
	1417	6.36	3.0	6.99	21.6	6770	1.5	-35.9	9.1		D) bailer due to limited column; or
	1420	6.36	3.5	6.99	21.6	6780	1.4	-33.2	8.6		E) recovery well cycling sample
↓	1422	6.36	4.0	6.98	21.6	6780	1.4	-30.1	8.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1425	MW-123	6.36	6.98	21.6	6780	1.4	-30.1	8.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

2 1/2 ft of subsidence under pad; top of protective casing extends above lock on expandable cap.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-4A (Blockage at 12.22' tube able to pass)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (2-in ; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1045	NA	12.11	0.0	>12.22	11.5*	Yes	Issue	Issue	Yes		Weather: Cloudy 70's

Well Purging Record

* lowered intake as needed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1050	12.12	0.5	7.45	24.8	6550	3.5	-160.2	13.2	Clear w/ black particles	*Low-flow groundwater sample:*
	1052	12.12	1.0	7.35	24.0	6350	2.8	-162.3	10.9		(A) peristaltic pump w/ ded tubing
	1055	12.12	1.5	7.26	23.4	6190	2.6	-165.4	9.8		B) ded bladder pump
	1057	12.12	2.0	7.21	23.1	6100	2.5	-168.9	9.5		C) non-ded bladder pump; or
	1100	12.12	2.5	7.19	22.9	6060	2.5	-170.2	8.6		*Standard groundwater sample:*
	1102	12.12	3.0	7.17	22.8	6040	2.4	-171.6	8.3		D) bailer due to limited column; or
	1105	12.12	3.5	7.15	22.7	6030	2.4	-173.9	8.1		E) recovery well cycling sample
	1107	12.12	4.0	7.14	22.7	6030	2.4	-174.5	7.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1110	MW-4A	12.12	7.14	22.7	6030	2.4	-174.5	7.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cu,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-4B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1040	NA	11.35	0.0	72.37	67.4	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+ EB-EP-03 (same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	950	NA	8.94	0.0	20.15	14.8	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

* confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	955	9.00	0.5	7.29	22.3	9200	3.0	-121.5	15.2	Clear w/ orange particles	Low-flow groundwater sample:
	957	9.00	1.0	7.23	22.1	9240	1.9	-125.3	11.3		(A) peristaltic pump w/ ded tubing
	1000	9.00	1.5	7.15	21.9	9270	1.5	-127.2	10.5		B) ded bladder pump
	1002	9.00	2.0	7.10	21.9	9290	1.3	-130.1	9.8		C) non-ded bladder pump; or
	1005	9.00	2.5	7.07	21.9	9350	1.2	-132.5	9.1		Standard groundwater sample:
	1007	9.00	3.0	7.06	21.9	9370	1.2	-133.9	8.6		D) bailer due to limited column; or
	1010	9.00	3.5	7.06	21.9	9380	1.1	-135.5	8.0		E) recovery well cycling sample
	1012	9.00	4.0	7.05	21.9	9380	1.1	-137.4	7.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1015	MW-5A	9.00	7.05	21.9	9380	1.1	-137.4	7.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1030	EB-EP-03	NA	→	→	→	→	→	→	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	940	NA	8.85	0.0	53.54	48.5	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-5C (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

(2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	945	NA	9.03	0.0	71.64	66.6	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

2-in stainless steel well casing extends approximately 1-foot above to top of the steel protective casing; expandable locking cap is locked

Monitoring Well Purging and Sampling Record

+ Dup-EP-01 (same analysis)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-7A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup)

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	8.50	NA	7.96	0.0	17.25	12.1	Yes	Yes	Issue	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	855	8.06	0.5	7.42	21.7	9110	2.5	-63.2	32.5	Clear w/ orange particles	Low-flow groundwater sample:
	857	8.07	1.0	7.31	21.5	9170	1.9	-65.2	28.7		(A) peristaltic pump w/ ded tubing
	900	8.07	1.5	7.25	21.4	9190	1.6	-68.1	20.6		B) ded bladder pump
	902	8.07	2.0	7.22	21.4	9200	1.4	-69.9	17.3		C) non-ded bladder pump; or
	905	8.07	2.5	7.20	21.4	9210	1.3	-70.2	14.2		Standard groundwater sample:
	907	8.07	3.0	7.18	21.4	9210	1.3	-72.5	11.7		D) bailer due to limited column; or
	910	8.07	3.5	7.17	21.3	9220	1.3	-73.8	10.5		E) recovery well cycling sample
↓	912	8.07	4.0	7.16	21.3	9220	1.2	-74.6	9.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	915	MW-7A	8.07	7.16	21.3	9220	1.2	-74.6	9.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Cu,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	800	Dup-EP-01	8.07	7.16	21.3	9220	1.2	-74.6	9.8	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-7B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	845	NA	9.27	0.0	52.56	47.6	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+ Trip Blank - EP-02

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 8A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup)

Initials: SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	745	NA	9.41	0.0	20.74	16.4	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	750	9.86	0.5	6.31	21.5	10930	3.0	-131.5	10.9	clear w/ orange particles	Low-flow groundwater sample:
	757	10.01	1.0	6.44	21.5	10,960	2.1	-135.7	10.1		(A) peristaltic pump w/ ded tubing
	800	10.08	1.5	6.52	21.5	11,000	1.7	-137.2	9.7		B) ded bladder pump
	802	10.13	2.0	6.60	21.5	11,040	1.5	-139.1	9.2		C) non-ded bladder pump; or
	805	10.15	2.5	6.65	21.5	11,050	1.3	-140.3	8.3		Standard groundwater sample:
	807	10.17	3.0	6.68	21.5	11,050	1.2	-141.5	8.1		D) bailer due to limited column; or
	810	10.19	3.5	6.70	21.5	11,050	1.2	-142.9	7.5		E) recovery well cycling sample
	812	10.20	4.0	6.72	21.5	11,060	1.1	-143.3	7.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	815	OCD-8A	10.20	6.72	21.5	11,060	1.1	-143.3	7.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-8B (Gauge Only)
Event: Fall 2017 (Semiannual)
Area of Concern:

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	835	NA	9.01	0.0	56.65	51.7	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Do not gauge or sample, Fall 2017]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - P4
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; short stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/7												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-25 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1700	NA	13.92	0.0	28.18	23.2	Yes	Yes	Yes	Yes	subsidence under pad	Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NP-8 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1705	NA	12.46	0.0	15.20	NS	Issue	Issue	Yes	Yes		Weather: Pt. cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0		PVC well is approx 2.0' below top						A) peristaltic pump w/ ded tubing
			1.5		of metal casing. Unable to access top						B) ded bladder pump
			2.0		of PVC well, so no cap is present.						C) non-ded bladder pump; or
			2.5		DTW + TD measured from Top of						*Standard groundwater sample:*
			3.0		metal casing. HMI suggests						D) bailer due to limited column; or
			3.5		metal protective casing should						E) recovery well cycling sample
			4.0		be cut down.						F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-1R (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in, stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1710	NA	10.43	0.0	20.63	15.6	Yes	Issue	Yes	Yes		Weather: Pt. Cloudy, 70s

↳ casing & lid are bent, making closure difficult. Well still locks & is functional.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-15 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRA

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1715	NA	11.53	0.0	21.70	17.7	Yes	Yes	Yes	Yes		Weather: Pt. cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(10-3-17)

+ Trip Blank - EP-03

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD - 1R
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BR H

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1235	NA	11.70	0.0	23.89	18.6	Yes	Issue	Yes	Yes		Weather: Cloudy, 70s

↳ casing lid does not fully close. PVC casing needs to be cut down for full closure. Well is secured w/ long-hasp lock.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1240	11.87	0.5	7.53	24.1	10,520	2.4	-39.6	9.6	Clear	*Low-flow groundwater sample:*
	1243	11.89	1.0	7.39	23.2	10,400	1.4	-31.9	7.9		(A) peristaltic pump w/ ded tubing
	1245	11.90	1.5	7.30	22.8	10,250	1.1	-28.1	7.1		B) ded bladder pump
	1248	11.90	2.0	7.24	22.6	10,170	0.9	-22.5	5.8		C) non-ded bladder pump; or
	1250	11.90	2.5	7.22	22.5	10,120	0.8	-20.3	4.7		*Standard groundwater sample:*
	1253	11.90	3.0	7.20	22.4	10,090	0.7	-19.8	4.0		D) bailer due to limited column; or
	1255	11.90	3.5	7.18	22.4	10,080	0.6	-19.1	3.6		E) recovery well cycling sample
	1258	11.90	4.0	7.17	22.3	10,070	0.6	-18.4	3.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1300	OCD-1R	11.90	7.17	22.3	10,070	0.6	-18.4	3.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-2A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1320	NA	11.61	0.0	27.58	22.3	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1620	11.73	0.5	7.65	24.2	7770	2.7	-118.3	20.5	Clear w/ orange	*Low-flow groundwater sample:*
	1623	11.74	1.0	7.62	23.2	7390	1.3	-117.0	16.7	algae particles	(A) peristaltic pump w/ ded tubing
	1625	11.74	1.5	7.58	23.0	7180	1.1	-116.7	10.2		B) ded bladder pump
	1628	11.74	2.0	7.53	22.8	6980	0.9	-116.1	8.9		C) non-ded bladder pump; or
	1630	11.74	2.5	7.51	22.6	6950	0.8	-115.5	7.8		*Standard groundwater sample:*
	1633	11.74	3.0	7.50	22.5	6920	0.7	-116.3	7.1		D) bailer due to limited column; or
	1635	11.74	3.5	7.48	22.4	6900	0.6	-116.9	6.8		E) recovery well cycling sample
	1638	11.74	4.0	7.47	22.4	6890	0.6	-117.3	6.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1640	OCD-2A	11.74	7.47	22.4	6890	0.6	-117.3	6.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-2B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1323	NA	11.44	0.0	50.39	NS	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-3
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

new cap added (old broke) (2-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1330	NA	12.29	0.0	25.48	20.2	Yes	Yes	Yes	Yes	Pad is	Weather: Pt. Cloudy, 70s
								Issue			destroyed	

(PVC) ↳ well casing needs to be cut down to allow full closure of lid. long-hasp lock on well to secure

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1505	12.32	0.5	7.48	24.0	8630	2.0	-27.4	13.1	Clear	*Low-flow groundwater sample:*
	1508	12.33	1.0	7.37	23.0	8380	1.4	-26.1	9.7		(A) peristaltic pump w/ ded tubing
	1510	12.33	1.5	7.31	22.6	8120	1.1	-24.9	9.0		B) ded bladder pump
	1513	12.33	2.0	7.29	22.4	8060	1.0	-22.0	8.3		C) non-ded bladder pump; or
	1515	12.33	2.5	7.26	22.3	8030	0.9	-20.7	7.9		*Standard groundwater sample:*
	1518	12.33	3.0	7.25	22.2	8010	0.8	-19.1	7.6		D) bailer due to limited column; or
	1520	12.33	3.5	7.24	22.1	8000	0.8	-18.3	7.1		E) recovery well cycling sample
	1523	12.33	4.0	7.24	22.0	7990	0.8	-17.9	6.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1525	OCD-3	12.33	7.24	22.0	7990	0.8	-17.9	6.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-4
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1335	NA	11.57	0.0	25.42	20.1	Yes	Yes	Yes	Yes	subsidence	Weather: Sunny, 70s
											under pad	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1430	11.60	0.5	7.21	24.5	14,870	1.9	-85.1	52.0	Clear w/ orange	*Low-flow groundwater sample:*
	1433	11.60	1.0	7.19	23.0	14,780	1.2	-85.4	44.7	algae particles	(A) peristaltic pump w/ ded tubing
	1435	11.60	1.5	7.16	22.8	14,710	0.9	-84.9	38.5		B) ded bladder pump
	1438	11.60	2.0	7.15	22.6	14,660	0.7	-84.6	30.4		C) non-ded bladder pump; or
	1440	11.60	2.5	7.14	22.5	14,640	0.7	-83.8	27.8		*Standard groundwater sample:*
	1443	11.60	3.0	7.14	22.4	14,620	0.6	-81.9	26.7		D) bailer due to limited column; or
	1445	11.60	3.5	7.13	22.4	14,610	0.6	-81.0	26.2		E) recovery well cycling sample
	1448	11.60	4.0	7.13	22.3	14,610	0.5	-80.4	26.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1450	OCD-4	11.60	7.13	22.3	14,610	0.5	-80.4	26.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-11A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; Stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1340	NA	9.23	0.0	22.01	17.0	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1540	9.33	0.5	6.95	23.7	26,700	1.8	-42.8	12.7	Clear	*Low-flow groundwater sample:*
	1543	9.33	1.0	6.88	23.4	27,000	1.1	-42.2	10.1		(A) peristaltic pump w/ ded tubing
	1545	9.33	1.5	6.83	23.2	27,200	0.9	-40.1	9.6		B) ded bladder pump
	1548	9.33	2.0	6.81	23.0	27,300	0.8	-38.6	8.4		C) non-ded bladder pump; or
	1550	9.33	2.5	6.80	22.8	27,300	0.7	-35.9	7.8		*Standard groundwater sample:*
	1553	9.33	3.0	6.80	22.7	27,400	0.7	-35.2	7.3		D) bailer due to limited column; or
	1555	9.33	3.5	6.79	22.6	27,400	0.6	-34.8	7.1		E) recovery well cycling sample
	1558	9.33	4.0	6.79	22.6	27,500	0.6	-34.5	6.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1600	MW-11A	9.33	6.79	22.6	27,500	0.6	-34.5	6.9	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										~~VOC~~	~~HCL~~	~~8260~~
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-11B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRA

Well Inspection Information

(2-in; stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1343	NA	9.18	0.0	47.30	42.3	Yes	Yes	Yes	Yes		Weather: Sunny, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: OCD-5
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1350	NA	9.70	0.0	25.42	20.6	Yes	Yes	Yes	Yes	Rd severely cracked	Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1355	9.77	0.5	7.58	24.0	16,520	2.9	-111.7	83.0	sl. cloudy; orange	*Low-flow groundwater sample:*
	1358	9.77	1.0	7.51	22.8	16,610	1.3	-115.8	69.0	algae particles	(A) peristaltic pump w/ ded tubing
	1400	9.77	1.5	7.44	22.3	16,690	1.0	-113.9	56.0		B) ded bladder pump
	1403	9.77	2.0	7.41	22.1	16,740	0.9	-110.5	51.0		C) non-ded bladder pump; or
	1405	9.77	2.5	7.39	22.0	16,800	0.8	-107.6	44.8		*Standard groundwater sample:*
	1408	9.77	3.0	7.38	21.9	16,810	0.7	-107.0	42.5		D) bailer due to limited column; or
	1410	9.77	3.5	7.36	21.8	16,820	0.7	-106.3	41.8		E) recovery well cycling sample
	1413	9.77	4.0	7.35	21.8	16,830	0.7	-105.8	42.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1415	OCD-5	9.77	7.35	21.8	16,830	0.7	-105.8	42.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-87
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	910	NA	8.65	0.0	20.39	15.1	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	915	8.77	0.5	6.81	21.8	17,100	2.2	-106.1	8.4	clear	*Low-flow groundwater sample:*
	918	8.82	1.0	6.88	21.7	17,290	1.3	-108.0	6.0		(A) peristaltic pump w/ ded tubing
	920	8.86	1.5	6.93	21.6	17,330	1.0	-109.3	4.9		B) ded bladder pump
	923	8.89	2.0	6.98	21.6	17,350	0.9	-110.1	3.6		C) non-ded bladder pump; or
	925	8.92	2.5	7.01	21.5	17,360	0.7	-110.8	2.8		*Standard groundwater sample:*
	928	8.95	3.0	7.02	21.5	17,360	0.6	-111.3	2.1		D) bailer due to limited column; or
	930	8.98	3.5	7.02	21.4	17,370	0.6	-112.7	1.7		E) recovery well cycling sample
	933	9.01	4.0	7.03	21.4	17,380	0.5	-113.6	1.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	935	MW-87	9.01	7.03	21.4	17,380	0.5	-113.6	1.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18A
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1000	NA	10.00	0.0	22.58	17.9	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s

Well Purging Record *confirmed SC

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1005	10.22	0.5	7.29	21.8	23,100	2.5	-94.0	6.3	Clear	*Low-flow groundwater sample:*
↓	1008	10.30	1.0	7.19	21.1	23,200	2.0	-99.1	4.1	↓	(A) peristaltic pump w/ ded tubing
	1010	10.37	1.5	7.13	20.9	23,200	1.8	-96.8	2.7		B) ded bladder pump
	1013	10.42	2.0	7.10	20.8	23,300	1.5	-92.4	2.2		C) non-ded bladder pump; or
	1015	10.47	2.5	7.08	20.7	23,300	1.2	-91.8	1.8		*Standard groundwater sample:*
	1018	10.50	3.0	7.08	20.7	23,400	1.0	-91.1	1.4		D) bailer due to limited column; or
	1020	10.53	3.5	7.07	20.6	23,400	0.9	-90.7	1.3		E) recovery well cycling sample
↓	1023	10.56	4.0	7.06	20.6	23,400	0.9	-90.3	1.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1025	MW-18A	10.56	7.06	20.6	23,400	0.9	-90.3	1.3	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	958	NA	9.93	0.0	50.59	45.6	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18T (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	955	NA	9.73	0.0	50.38	NS	NO	Issue	Issue	Yes		Weather: Cloudy, 70s
			↳ measured from highest point on PVC					(missing lid)	(Lock won't resolve issue)			

↳ Top of PVC casing shattered. Needs repairs to allow usage of a cap.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-70
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1045	NA	8.29	0.0	22.85	16.8	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1050	8.35	0.5	7.32	23.3	8460	2.1	-79.6	47.6	clear w/ orange	*Low-flow groundwater sample:*
	1053	8.36	1.0	7.30	22.8	7860	1.8	-80.1	39.8	algae particles	(A) peristaltic pump w/ ded tubing
	1055	8.36	1.5	7.26	22.4	7390	1.3	-82.0	30.4		B) ded bladder pump
	1058	8.36	2.0	7.23	22.2	7190	1.0	-83.4	18.7		C) non-ded bladder pump; or
	1100	8.36	2.5	7.16	21.9	7020	1.0	-84.7	12.6		*Standard groundwater sample:*
	1103	8.36	3.0	7.13	21.8	6960	0.9	-83.1	9.8		D) bailer due to limited column; or
	1105	8.36	3.5	7.12	21.8	6940	0.8	-82.4	7.4		E) recovery well cycling sample
	1108	8.36	4.0	7.11	21.7	6930	0.8	-82.1	6.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1110	MW-70	8.36	7.11	21.7	6930	0.8	-82.1	6.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										~~Anions (Chloride,Fluoride,Sulfate)~~	~~Neat~~	~~300~~
										~~Cations (Ca,K,Na), taken from total metals bottle~~	~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

+ EB-EP-02 (same analysis)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-124
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1125	NA	8.96	0.0	22.01	17.0	Yes	Yes	Yes	Yes		Weather: 87. cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1130	8.99	0.5	7.16	23.4	12,910	3.2	-83.4	62.0	clear w/ orange	*Low-flow groundwater sample:*
↓	1133	9.00	1.0	7.09	22.6	12,920	1.4	-83.9	34.9	algae particles	(A) peristaltic pump w/ ded tubing
	1135	9.00	1.5	7.04	22.2	12,890	1.1	-84.2	22.8	↓	B) ded bladder pump
	1138	9.00	2.0	7.00	22.0	12,840	1.0	-84.0	16.9		C) non-ded bladder pump; or
	1140	9.00	2.5	6.99	21.9	12,800	1.0	-85.2	15.7		*Standard groundwater sample:*
	1143	9.00	3.0	6.97	21.8	12,790	1.0	-86.1	15.1		D) bailer due to limited column; or
	1145	9.00	3.5	6.95	21.8	12,780	0.9	-85.5	14.6		E) recovery well cycling sample
↓	1148	9.00	4.0	6.94	21.7	12,780	0.9	-85.7	14.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1150	MW-124	9.00	6.94	21.7	12,780	0.9	-85.7	14.9	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~*Long List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1210	EB-EP-02	NA	→	→	→	→	→	→	Same analysis	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Driveway near bldg A/C unit

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-52
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in ; at-grade) Initials: BR H

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1920	NA	16.33	0.0	34.67	29.5	Yes	Yes	Issue	Yes		Weather: Cloudy, 60s
10-4-17	750	NA	16.34	0.0	34.67	29.5			↓			

↳ missing 9/16 bolts. Holes do not line up on current at-grade plate.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	755	16.38	0.5	7.18	20.7	3470	3.1	34.0	9.1	clear	*Low-flow groundwater sample:*
	758	16.39	1.0	7.08	20.6	3450	2.0	39.2	7.3	↓	(A) peristaltic pump w/ ded tubing
	800	16.39	1.5	7.03	20.6	3410	1.6	40.6	5.8		B) ded bladder pump
	803	16.39	2.0	6.99	20.5	3380	1.2	43.1	4.7		C) non-ded bladder pump; or
	805	16.39	2.5	6.97	20.4	3320	1.1	45.6	4.2		*Standard groundwater sample:*
	808	16.39	3.0	6.96	20.4	3310	1.0	46.1	3.8		D) bailer due to limited column; or
	810	16.39	3.5	6.95	20.4	3300	0.9	46.8	3.3		E) recovery well cycling sample
↓	813	16.39	4.0	6.94	20.4	3300	0.9	47.3	3.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	815	MW-52	16.39	6.94	20.4	3300	0.9	47.3	3.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

E. side of blue bldg.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-109
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1924	NA	14.63	0.0	29.48	25.5	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s
10-4-17	835	NA	14.63	0.0	29.48	25.5						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	840	14.79	0.5	6.58	22.0	3610	2.0	-345.7	18.9	clear w/ black tint,	*Low-flow groundwater sample:*
↓	843	14.85	1.0	6.56	22.0	3570	1.0	-351.2	13.0	odor	(A) peristaltic pump w/ ded tubing
	845	14.90	1.5	6.55	22.0	3550	0.8	-354.5	10.3	↓	B) ded bladder pump
	848	14.92	2.0	6.55	22.0	3530	0.7	-357.0	9.8		C) non-ded bladder pump; or
	850	14.94	2.5	6.54	21.9	3520	0.6	-359.3	8.1		*Standard groundwater sample:*
	853	14.95	3.0	6.54	21.9	3510	0.6	-360.8	7.2		D) bailer due to limited column; or
	855	14.96	3.5	6.53	21.8	3510	0.5	-361.4	6.9		E) recovery well cycling sample
↓	858	14.97	4.0	6.53	21.8	3510	0.5	-361.9	6.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	900	MW-109	14.97	6.53	21.8	3510	0.5	-361.9	6.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

W. - side driveway of blue bldg.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-110
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BZH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1930	NA	13.26	0.0	29.74	24.7	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s
10-4-17	920	NA	13.27	0.0	29.74	24.7						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	925	13.41	0.5	7.51	21.7	2870	2.8	-239.1	16.7	Clear, odor	*Low-flow groundwater sample:*
	928	13.47	1.0	7.22	21.6	2580	1.3	-250.7	11.2		(A) peristaltic pump w/ ded tubing
	930	13.52	1.5	7.14	21.6	2390	1.0	-255.8	9.5		B) ded bladder pump
	933	13.55	2.0	7.07	21.5	2260	0.8	-259.2	7.8		C) non-ded bladder pump; or
	935	13.57	2.5	7.03	21.5	2200	0.6	-261.9	6.9		*Standard groundwater sample:*
	938	13.58	3.0	7.01	21.4	2180	0.6	-263.4	6.4		D) bailer due to limited column; or
	940	13.59	3.5	6.99	21.4	2170	0.5	-265.0	6.1		E) recovery well cycling sample
	943	13.60	4.0	6.98	21.4	2160	0.5	-266.3	5.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	945	MW-110	13.60	6.98	21.4	2160	0.5	-266.3	5.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

No Sampling due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-13 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1755	NA	11.88	0.0	21.10	Not Sampled	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

No sampling due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-69 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BFH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1750	NA	10.51	0.0	22.50	Not Sampled	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

No sampling due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-12 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; Stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BRH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1810	NA	9.74	0.0	17.93	Not Sampled	Yes	Yes	Yes	Yes		Weather: Pt. Cloudy, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

No sampling due to location E. of river

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-24 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BZH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1830	NA	11.48	0.0	23.51	Not Sampled	Yes	Yes	Issue	Yes		Weather: Pt. Cloudy, 70s

↳ Broken hasp/hinge. well is locked but will not close securely.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

No Sampling due to location N. of river

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-14 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: EP

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup) Initials: BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1835	NA	10.59	0.0	11.93	NS	Yes	Issue	Yes	Yes		Weather: Pt. Cloudy, 70s
								Blockage @ 11.93' TOC				

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Recently off, due to water rights issue

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico
Well Inspection Information (Sample port if RW is active)

Well: RW-12R (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Above-grade recovery vault
12-in well casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: BM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1048	NA	18.14	0.0	NM	Top of pump (If not active)	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

+ EB-Rest-01
+ Dup-Rest-01
(both for same analyses)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-113
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1045	NA	18.44	0.0	37.80	33.8	Yes	Yes	Yes	Yes		Weather: Cloudy 70's
10.4.17	1115	NA	18.61	0.0	37.80	33.8						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.4.17	1120	18.65	0.5	7.12	21.7	2710	2.2	-189.4	8.1	Clear	*Low-flow groundwater sample:*
	1122	18.65	1.0	7.02	21.4	2690	2.1	-185.1	7.4		(A) peristaltic pump w/ ded tubing
	1125	18.65	1.5	6.96	21.2	2670	2.0	-179.6	7.2		B) ded bladder pump
	1127	18.66	2.0	6.90	21.1	2650	2.0	-174.5	6.9		C) non-ded bladder pump; or
	1130	18.66	2.5	6.87	21.0	2630	1.9	-172.1	6.7		*Standard groundwater sample:*
	1132	18.66	3.0	6.85	21.0	2620	1.9	-170.0	6.1		D) bailer due to limited column; or
	1135	18.66	3.5	6.83	21.1	2620	1.8	-168.9	5.9		E) recovery well cycling sample
	1137	18.66	4.0	6.81	21.1	2610	1.8	-167.4	5.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	1140	MW-113	18.66	6.81	21.1	2610	1.8	-167.4	5.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1100	DUP-Rest-01								Same analysis	Same	Same
	1210	EB-Rest-01	NA							Same analysis	Same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-8
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BB

Date	Time	* Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1040	16.65	16.66	0.01	35.80	30.8	Yes	Yes	Yes	Yes		Weather: Cloudy 70's
		*production probe										

Well Purging Record used absorbant pad tie wrapped to water level probe to remove LNAPL prior to sampling

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1620	16.75	0.5	7.18	28.0	3186	1.7	-179.4	11.8	Clear (strong HC odor)	Low-flow groundwater sample:
	1623	16.77	1.0	7.03	27.7	3294	1.6	-193.2	10.1	" "	(A) peristaltic pump w/ ded tubing
	1625	16.77	1.5	6.97	26.9	3368	1.4	-199.7	9.4	" "	B) ded bladder pump
	1628	16.77	2.0	6.88	26.5	3389	1.1	-216.4	8.6	" "	C) non-ded bladder pump; or
	1630	16.77	2.5	6.82	26.3	3402	0.9	-228.3	7.7	" "	Standard groundwater sample:
	1633	16.77	3.0	6.80	26.2	3411	0.8	-232.1	7.2	" "	D) bailer due to limited column; or
	1635	16.77	3.5	6.80	26.2	3415	0.7	-233.7	6.9	" "	E) recovery well cycling sample
	1638	16.77	4.0	6.79	26.1	3418	0.7	-234.6	6.7	" "	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1640	KWB-8	16.77	6.79	26.1	3418	0.7	-234.6	6.7	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-22 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Screen: 11.5 - 39) Above-grade Recovery Vault 12-in casing diameter Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1037	16.88	17.31	0.43	NM	NA	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

when sampled; sample part with active RW (RW off 10/3/17)

Well Purging Record

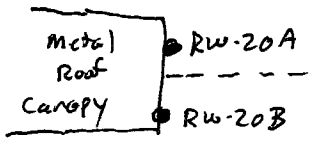
Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico



Well: RW-20A (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: RCST

At-grade vault
6-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Initials: BJ3

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1032	19.94	20.01	0.07	NM	NA (Sample port)	Yes (NA)	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Metal Roof Canopy — RW-20A — RW-20B — Vault

Well: RW-20B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

At-grade vault
6-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Initials: BJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1028	19.98	20.37	0.39	NM	NA	Yes (NA)	Yes	Yes	Yes		Weather: Cloudy 70's
						(sample part)						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-13R (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Above-grade vault
12-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: RSB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1053	17.05	17.28	0.23	nm	Sample port	Yes	Yes	Yes	Yes		Weather Cloudy 70's
					Pump in well							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-14R (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Above-grade vault
12-in casing diameter

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1058	16.59	17.71	0.12	NM	Sample Port	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-133
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1102	16.89	17.16	0.27	37.64	27.9	Yes	Yes	Yes	Yes		Weather: Cloudy 70's
					Spsf							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5	not sampled due to product							*Low-flow groundwater sample:*
			1.0	greater than 0.03'							(A) peristaltic pump w/ ded tubing
			1.5	(or equal to)							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank - Rest-01

Monitoring Well Purging and Sampling Record

+ Dup-Rest-03
+ EB-Rest-03
(both for same analyses)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-134
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1106	NA	16.52	0.0	32.95	28.4	Yes	Yes	Yes	Yes		Weather: Cloudy 70's
10/4/17	1045	NA	16.51	0.0	50ft							Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1050	16.53	0.5	6.91	20.6	5275	2.9	52.7	9.2	Clear	*Low-flow groundwater sample:*
	1053	16.53	1.0	6.87	20.1	5273	2.1	56.8	8.1	"	(A) peristaltic pump w/ ded tubing
	1055	16.53	1.5	6.83	19.7	5271	1.7	60.7	7.6	"	B) ded bladder pump
	1058	16.53	2.0	6.80	19.5	5273	1.5	64.6	5.5	"	C) non-ded bladder pump; or
	1100	16.53	2.5	6.78	19.4	5275	1.3	65.8	4.0	"	*Standard groundwater sample:*
	1103	16.53	3.0	6.77	19.3	5276	1.2	66.9	3.8	"	D) bailer due to limited column; or
	1105	16.53	3.5	6.77	19.3	5271	1.1	67.2	3.7	"	E) recovery well cycling sample
	1108	16.53	4.0	6.76	19.2	5277	1.1	67.7	3.7	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1110	MW-134	16.53	6.76	19.2	5277	1.1	67.7	3.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,Li)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1200	Dup-Rest-03	16.53	6.76	19.2	5277	1.1	67.7	3.7	same analyses	same	Same
	1120	EB-Rest-03	NA							same analyses	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Irrigation well
Inside green, block bldg.
No purge
Sample port (faucet)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA - 4798
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring for TRC
Houston, Texas

Well Inspection Information Screen 840 - 850 ft-bgs

Initials: BSB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1700	NA	NA	NA	NA	NA	NA	NA	Yes	Yes		Weather: Sunny 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Clear	*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	No purge, sample port							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1700	RA-4798	NA	7.03	19.1	1189	1.7	76.4	0.9	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					HNO_3	6010/6020 and/or 7470
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Irrigation well
Inside green, block bldg.
No purge
Sample port (faucet)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: RA - 4196
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring for TRC
Houston, Texas

Well Inspection Information Screen 280-292 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/4/17	1145	NA	NA	NA	NA	NA	NA	NA	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5							Clear	*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5	No purge, active well with sample port							B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1145	RA-4196	NR	6.91	23.8	2581	1.9	13.8	1.5	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	HNO_3	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Do not address - Removed from program by Navajo, 4-13-15]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-1227
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

[Irrigation well removed from program]

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen 194-246 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5		DO NOT ADDRESS						B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

No activity this event.

Monitoring Well Purging and Sampling Record

Irrigation well
No purge; sample part when sampled

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: RA-3156
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17		NA	NA	NA	NA	NA						Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

East of MW-101, across the street. No activity this event.

Irrigation and water supply role, per Navajo shift foreman, Doug Collins, 1H16

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RA-313
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Screen 904-1157 ft-bgs

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17						*						Weather:

Well Purging Record * Historically, when sampled, Navajo turns on well; prior to this - HMI installs temporary sample port. Removed when done.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								(F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Sock installed, 1H16
No Sock installed, 2H16

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-7
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BB

Date	Time	Depth to * LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1020	17.77	17.78	0.01	34.83	30.6	Yes	Yes	Yes	Yes	needs new pad	Weather: Cloudy, 70's

Well Purging Record (* noticable product on probe, dark brown) used asorbent pad tightly wrapped to water level probe to remove LNAPL prior to sampling

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity		
10/3/17	1310	17.81	0.5	7.00	20.4	3142	3.0	-78.6	10.6	clear	(strong HC odor)	*Low-flow groundwater sample:*
	1313	17.81	1.0	6.96	19.9	3168	2.1	-89.2	9.8	"	"	(A) peristaltic pump w/ ded tubing
	1315	17.81	1.5	6.88	19.6	3183	1.6	-94.8	8.9	"	"	B) ded bladder pump
	1318	17.81	2.0	6.83	19.5	3187	1.0	-97.3	8.1	"	"	C) non-ded bladder pump; or
	1320	17.81	2.5	6.81	19.4	3184	0.8	-99.1	7.6	"	"	*Standard groundwater sample:*
	1323	17.81	3.0	6.80	19.4	3181	0.7	-100.2	7.3	"	"	D) bailer due to limited column; or
	1325	17.81	3.5	6.79	19.3	3179	0.6	-101.0	7.1	"	"	E) recovery well cycling sample
	1328	17.81	4.0	6.79	19.3	3177	0.6	-101.7	6.9	"	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1330	KWB-7	17.81	6.79	19.3	3177	0.6	-101.7	6.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* HMI - dedicated bladder pump

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-135
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in ; at-grade) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1001	NA	26.35	0.0	65.55	50.0	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record (* All out of inf. of cell)

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity * (NTU)	Water Color / Clarity	
10/3/17	1530	26.37	0.5	7.13	19.5	6216	3.8	91.8	87.2	Clear (tiny white particles)	*Low-flow groundwater sample:*
	1533	26.37	1.0	6.97	19.2	6572	2.8	109.9	64.7	"	A) peristaltic pump w/ ded tubing
	1535	26.37	1.5	6.81	19.1	6603	2.7	116.7	56.8	"	(B) ded bladder pump
	1538	26.37	2.0	6.74	19.1	6613	2.6	119.8	49.3	"	C) non-ded bladder pump; or
	1540	26.37	2.5	6.71	19.1	6621	2.6	121.2	42.8	"	*Standard groundwater sample:*
	1543	26.37	3.0	6.69	19.0	6628	2.6	123.4	42.1	"	D) bailer due to limited column; or
	1545	26.37	3.5	6.68	19.0	6634	2.5	123.9	41.7	"	E) recovery well cycling sample
	1548	26.37	4.0	6.68	19.0	6639	2.5	124.6	41.6	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1550	MW-135	26.37	6.68	19.0	6639	2.5	124.6	41.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-20 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup) Initials: SD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1178	NA	12.24	0.0	26.66	21.9	Yes	Yes	Yes	Yes		Weather: Cloudy 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in sampling program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-3 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1511	NA	19.04	0.0	21.59	Not Sampled	Yes	Yes	Yes	Yes		Weather Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in sampling program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-4 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup)

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1114	NA	25.10	0.0	36.98	Not Sampled	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in Sampling program

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NP-2 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: BJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1123	NA	15.47	0.0	21.49	not sampled	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-1
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1127	NA	15.29	0.0	21.88	19.6	Yes	Yes	Yes	Yes		Weather: Cloudy 70's
10/4/17	1220	NA	15.30	0.0	(21.88)							Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1225	15.32	0.5	7.13	20.4	4957	2.8	57.3	4.7	Clear	*Low-flow groundwater sample:*
	1228	15.32	1.0	7.01	20.0	4939	2.4	56.6	3.0	"	(A) peristaltic pump w/ ded tubing
	1230	15.32	1.5	6.96	19.8	4921	1.9	55.3	2.4	"	B) ded bladder pump
	1233	15.32	2.0	6.94	19.6	4916	1.6	54.2	1.9	"	C) non-ded bladder pump; or
	1235	15.32	2.5	6.92	19.5	4908	1.4	53.9	1.5	"	*Standard groundwater sample:*
	1238	15.32	3.0	6.91	19.5	4903	1.4	53.0	1.3	"	D) bailer due to limited column; or
	1240	15.32	3.5	6.91	19.4	4899	1.3	52.7	1.1	"	E) recovery well cycling sample
	1243	15.32	4.0	6.90	19.4	4896	1.3	52.7	1.0	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1245	NP-1	15.32	6.90	19.4	4896	1.3	52.7	1.0	~~DRO~~	~~HCL~~	~~8015M~~
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								~~Anions (Chloride,Fluoride,Sulfate)~~			~~Neat~~	~~300~~
							~~Cations (Ca,K,Na), taken from total metals bottle~~				~~HNO3~~	~~6010/6020~~
										~~Nitrate-Nitrite~~	~~H2SO4~~	~~per historical, ESC Lab Sciences~~
										~~TDS~~	~~Neat~~	~~2540C~~
							~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO3~~	~~6010/6020~~
							~~*Long List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-6 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1130	NA	11.33	0.0	20-35	15.4	Yes	Yes	Yes	Yes		Weather Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-8 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1141	NA	9.80	0.0	20.12	15.3	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

added 10.4.17
+ Trip Blank- TMD-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-21
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: BS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1144	NA	11.13	0.0	25.12	19.9	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's
10.4.17	1220	NA	11.43	0.0	25.12	19.9						

Well Purging Record

* ORP Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	*Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.4.17	1225	11.51	0.5	7.34	22.6	5060	2.2	-41.6	8.6	clear	*Low-flow groundwater sample:*
|	1227	11.51	1.0	7.26	21.7	5110	1.8	-52.1	8.1	|	(A) peristaltic pump w/ ded tubing
|	1230	11.51	1.5	7.20	21.3	5150	1.6	-56.7	6.2	|	B) ded bladder pump
|	1232	11.51	2.0	7.16	21.1	5180	1.5	-57.3	5.9	|	C) non-ded bladder pump; or
|	1235	11.51	2.5	7.14	21.0	5190	1.5	-58.1	5.6	|	*Standard groundwater sample:*
|	1237	11.51	3.0	7.12	21.1	5210	1.4	-58.8	4.5	|	D) bailer due to limited column; or
|	1240	11.51	3.5	7.11	21.1	5220	1.4	-59.6	4.1	|	E) recovery well cycling sample
↓	1242	11.51	4.0	7.11	21.2	5230	1.4	-60.3	3.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	1245	MW-21	11.51	7.11	21.2	5230	1.4	-60.3	3.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in sampling program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-9
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1147	NP	10.21	0.0	20.19	not sampled	Yes	Yes	Yes	Yes	Cracked Pad	Weather Cloudy 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-71 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1135	NA	12.43	0.0	21.87	16.9	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-68 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	908	NA	15.81	0.0	26.52	21.5	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-27 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in ; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	920	NA	14.88	0.0	30.28	25.0	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-89 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	928	NA	8.33	0.0	20.28	15.2	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-16 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	940	NA	7.63	0.0	21.24	16.2	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-26 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	946	NA	9.38	0.0	27.58	22.6	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Pecan grove - Access from 82 gate]

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 11A
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1010	NA	17.43	0.0	42.27	37.0	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1435	17.46	0.5	7.16	20.3	4142	1.9	-90.6	4.6	Clear	*Low-flow groundwater sample:*
	1438	17.46	1.0	7.01	19.7	4938	1.6	-91.4	3.7	"	(A) peristaltic pump w/ ded tubing
	1446	17.46	1.5	6.97	19.5	5122	1.1	-92.8	3.3	"	B) ded bladder pump
	1453	17.46	2.0	6.89	19.4	5146	0.9	-93.3	3.0	"	C) non-ded bladder pump; or
	1455	17.46	2.5	6.85	19.3	5153	0.8	-93.8	2.7	"	*Standard groundwater sample:*
	1458	17.46	3.0	6.83	19.3	5158	0.7	-94.1	2.4	"	D) bailer due to limited column; or
	1450	17.46	3.5	6.82	19.3	5162	0.7	-95.2	2.2	"	E) recovery well cycling sample
	1453	17.46	4.0	6.82	19.3	5164	0.7	-95.4	2.1	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1455	KWB-11A	17.46	6.82	19.3	5164	0.7	-95.4	2.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Pecan grove - access from 82 gate]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 11B
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: BB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1015	NA	18.12	0.0	72.45	62.2	Yes	Yes	Yes	Yes		Weather: Cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1355	18.19	0.5	7.01	21.2	2,038	2.4	36.7	5.3	Clear	*Low-flow groundwater sample:*
	1358	18.20	1.0	6.97	20.7	2,634	1.6	50.3	3.8	"	(A) peristaltic pump w/ ded tubing
	1400	18.20	1.5	6.95	20.4	2,821	1.3	61.2	2.4	"	B) ded bladder pump
	1403	18.20	2.0	6.93	20.2	2,828	1.1	63.8	2.2	"	C) non-ded bladder pump; or
	1405	18.20	2.5	6.92	20.1	2832	1.0	65.2	1.9	"	*Standard groundwater sample:*
	1408	18.20	3.0	6.92	20.1	2,834	0.9	66.3	1.7	"	D) bailer due to limited column; or
	1410	18.20	3.5	6.92	20.1	2836	0.9	66.9	1.6	"	E) recovery well cycling sample
	1413	18.20	4.0	6.91	20.1	2,840	0.8	67.2	1.5	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1415	KWB-11B	18.20	6.91	20.1	2,840	0.8	67.2	1.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Historically not addressed, per Navajo, 4-13-15

Monitoring Well Purging and Sampling Record

Jack Jay (farmer)
575-365-6042

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-3AR
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

ATV - S. Field RO-Reject water field

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-115
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: BS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1745	NA	7.42	0.0	27.50	19.8	Yes	Yes	Yes	Yes		Weather: Cloudy, 80's
10/4/17	850	NA	7.44	0.0	27.50	19.8						Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	853	7.47	0.5	6.87	18.7	5362	3.2	-16.3	5.1	Clear	*Low-flow groundwater sample:*
	858	7.48	1.0	6.72	18.4	5313	1.9	+20.9	3.0	"	(A) peristaltic pump w/ ded tubing
	900	7.48	1.5	6.68	18.3	5299	1.8	35.4	2.6	"	B) ded bladder pump
	903	7.48	2.0	6.64	18.2	5284	1.8	44.6	1.7	"	C) non-ded bladder pump; or
	905	7.48	2.5	6.62	18.2	5281	1.7	51.2	1.4	"	*Standard groundwater sample:*
	908	7.48	3.0	6.62	18.2	5278	1.5	54.9	1.2	"	D) bailer due to limited column; or
	910	7.48	3.5	6.61	18.1	5275	1.4	56.0	1.1	"	E) recovery well cycling sample
	913	7.48	4.0	6.60	18.1	5273	1.4	56.4	1.1	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	915	MW-115	7.48	6.60	18.1	5273	1.4	56.4	1.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

ATV - S. Field RO- Reject water field

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-114
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: BJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1750	NA	8.49	0.0	38.25	30.5	Yes	Yes	Yes	Yes		Weather: cloudy 80's
10/4/17	945	NA	8.48	0.0								cloudy 90's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	950	8.51	0.5	6.92	22.5	3998	2.6	4.4	10.2	Clear	*Low-flow groundwater sample:*
	953	8.51	1.0	6.86	22.5	3987	1.9	31.2	8.8	"	(A) peristaltic pump w/ ded tubing
	955	8.51	1.5	6.81	22.4	3975	1.8	38.6	6.1	"	B) ded bladder pump
	958	8.51	2.0	6.79	22.3	3972	1.7	42.7	5.0	"	C) non-ded bladder pump; or
	1000	8.51	2.5	6.78	22.3	3970	1.5	45.3	4.7	"	*Standard groundwater sample:*
	1003	8.51	3.0	6.78	22.2	3969	1.3	46.1	4.4	"	D) bailer due to limited column; or
	1005	8.51	3.5	6.77	22.2	3968	1.2	46.9	4.2	"	E) recovery well cycling sample
↓	1008	8.51	4.0	6.77	22.2	3967	1.2	47.2	4.1	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1010	MW-114	8.51	6.77	22.2	3967	1.2	47.2	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-117
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GAS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1810	NA	8.65	0.0	27.22	19.7	YES	YES	YES	YES		Weather: Cloudy, 70's
10/4/17	810	NA	8.61									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	815	8.67	0.5	7.54	17.6	3330	3.7	52.3	8.5	colorless / clear	*Low-flow groundwater sample:*
	817	8.69	1.0	7.31	17.3	3340	2.9	62.9	5.0		(A) peristaltic pump w/ ded tubing
	820	8.69	1.5	7.12	17.1	3330	2.1	74.3	3.2		B) ded bladder pump
	823	8.69	2.0	7.02	17.1	3320	1.9	78.4	2.9		C) non-ded bladder pump; or
	825	8.69	2.5	6.94	17.0	3320	1.7	80.1	2.6		*Standard groundwater sample:*
	827	8.69	3.0	6.89	17.0	3320	1.4	81.9	2.7		D) bailer due to limited column; or
	830	8.69	3.5	6.87	17.0	3320	1.4	82.6	2.4		E) recovery well cycling sample
	833	8.69	4.0	6.86	17.0	3320	1.3	83.4	2.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	835	MW-117	8.69	6.86	17.0	3320	1.3	83.4	2.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-118
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1816	NA	5.83	0.0	28.29	21.0	YES	YES	YES	YES		Weather: cloudy, 70's
10/4/17	855	NA	5.81									

Well Purging Record *FDTW CONFIRMED

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	900	5.90	0.5	7.25	17.9	3580	5.4	95.1	8.9	Colorless / Clear	*Low-flow groundwater sample:*
	903	5.90	1.0	7.17	17.8	3620	5.0	100.0	5.0		(A) peristaltic pump w/ ded tubing
	905	5.90	1.5	7.10	17.7	3640	4.9	103.3	2.3		B) ded bladder pump
	907	5.90	2.0	7.04	17.8	3650	4.8	105.8	3.2		C) non-ded bladder pump; or
	910	5.90	2.5	7.03	17.7	3650	4.8	106.6	2.9		*Standard groundwater sample:*
	913	5.90	3.0	7.01	17.8	3650	4.7	108.3	2.1		D) bailer due to limited column; or
	915	5.90	3.5	6.99	17.8	3660	4.7	109.3	1.9		E) recovery well cycling sample
	917	5.90	4.0	6.98	17.8	3660	4.7	110.1	1.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	920	MW-118	5.90	6.98	17.8	3660	4.7	110.1	1.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Not in sampling program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-9 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GBS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1820	NA	6.84	0.0	25.89	Not Sampled	Yes	# Issue	# Issue	Yes		Weather: Partly cloudy, 80's
								# NEEDS	NEW MONUMENT CASING lid			

Well Purging Record # DTW CONFIRMED

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-119
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1826	NA	10.69	0.0	28.11	20.8	YES	YES	YES	YES		Weather: Cloudy, 70's
10/4/17	940	NA	10.72									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	945	10.75	0.5	7.22	19.7	3590	3.8	101.2	9.6	colorless / clear	*Low-flow groundwater sample:*
	947	10.75	1.0	6.98	19.6	3600	2.4	100.9	7.3		(A) peristaltic pump w/ ded tubing
	950	10.75	1.5	6.89	19.7	3590	2.2	100.7	5.0		B) ded bladder pump
	953	10.75	2.0	6.83	19.7	3600	1.9	101.0	4.2		C) non-ded bladder pump; or
	955	10.75	2.5	6.78	19.7	3610	1.8	101.3	3.9		*Standard groundwater sample:*
	957	10.75	3.0	6.77	19.7	3610	1.8	101.1	4.4		D) bailer due to limited column; or
	1000	10.75	3.5	6.77	19.7	3620	1.8	100.9	5.0		E) recovery well cycling sample
	1003	10.75	4.0	6.76	19.7	3620	1.8	100.5	4.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1005	MW-119	10.75	6.76	19.7	3620	1.8	100.5	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Cross-gradient

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NP-5 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1020	NA	12.71	0.0	25.09	20.0	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Cross-gradient; N. of RO-Reject Field

Well installed 7-28-14

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-136
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1029	NA	10.55	0.0	27.90	23.0	YES	YES	Yes	YES		Weather: Cloudy, 70's
					↳Soft Base							

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1035	10.61	0.5	7.51	18.4	4030	2.9	80.1	46.1	colorless / sl. cloudy	*Low-flow groundwater sample:*
↓	1037	10.61	1.0	7.22	18.1	4070	2.1	87.1	37.3	↓	(A) peristaltic pump w/ ded tubing
	1040	10.61	1.5	7.11	18.0	4060	1.7	90.8	30.8		B) ded bladder pump
	1043	10.61	2.0	6.98	17.9	4010	1.6	94.3	24.2	colorless / clear	C) non-ded bladder pump; or
	1045	10.61	2.5	6.93	17.9	4010	1.7	96.1	19.0	↓	*Standard groundwater sample:*
	1047	10.61	3.0	6.90	17.9	4010	1.7	97.4	14.0		D) bailer due to limited column; or
	1050	10.61	3.5	6.88	17.9	4000	1.7	98.1	12.9	↓	E) recovery well cycling sample
↓	1053	10.61	4.0	6.86	17.9	3990	1.7	99.5	9.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1055	MW-136	10.61	6.86	17.9	3990	1.7	99.5	9.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-126A
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: GMS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	906	NA	15.67	0.0	37.51	29.5	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's
10/3/17	1600	NA	15.61									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1605	15.62	0.5	7.41	22.6	2690	2.6	-133.1	97.1	colorless / sl. cloudy	*Low-flow groundwater sample:*
	1607	15.62	1.0	7.17	21.5	2640	2.0	-130.0	60.2	↓	(A) peristaltic pump w/ ded tubing
	1610	15.62	1.5	7.09	21.1	2620	1.9	-129.9	45.3		B) ded bladder pump
	1613	15.62	2.0	7.04	20.8	2600	1.9	-129.8	17.5	colorless / clear	C) non-ded bladder pump; or
	1615	15.62	2.5	6.95	20.4	2570	1.8	-131.2	11.3		*Standard groundwater sample:*
	1617	15.62	3.0	6.92	20.3	2550	1.8	-131.7	7.0		D) bailer due to limited column; or
	1620	15.62	3.5	6.91	20.2	2540	1.8	-132.0	5.9		E) recovery well cycling sample
↓	1623	15.62	4.0	6.90	20.2	2530	1.8	-132.3	5.0	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1625	MW-126A	15.62	6.90	20.2	2530	1.8	-132.3	5.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-126B
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	909	NA	15.50	0.0	51.43	48.4	Yes	Yes	Yes	Yes		Weather: Partly cloudy, 80's
10/3/17	1640	NA	15.48		↳ SAME	BOTTOM						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1645	15.59	0.5	7.09	22.3	3430	3.4	-83.9	7.4	colorless / clear	*Low-flow groundwater sample:*
↓	1647	15.60	1.0	6.90	20.4	3600	2.0	-47.5	8.1	↓	(A) peristaltic pump w/ ded tubing
	1650	15.60	1.5	6.90	20.2	3610	1.7	-32.1	7.6		B) ded bladder pump
	1653	15.60	2.0	6.86	20.1	3630	1.5	-25.8	6.9		C) non-ded bladder pump; or
	1655	15.60	2.5	6.83	20.1	3630	1.5	-19.2	6.4		*Standard groundwater sample:*
	1657	15.60	3.0	6.81	20.0	3640	1.4	-15.6	5.8		D) bailer due to limited column; or
	1700	15.60	3.5	6.78	19.9	3640	1.3	-13.9	5.7		E) recovery well cycling sample
↓	1703	15.60	4.0	6.76	19.9	3650	1.3	-12.3	5.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1705	MW-126B	15.60	6.76	19.9	3650	1.3	-12.3	5.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-127
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	900	NA	18.95	0.0	53.21	38.4	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 80's
10/3/17	1720	NA	18.90									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1725	18.91	0.5	7.16	22.8	2530	3.7	-166.7	2.9	Colorless / Clear	*Low-flow groundwater sample:*
	1727	18.92	1.0	6.93	21.4	2540	2.2	-172.9	3.2		(A) peristaltic pump w/ ded tubing
	1730	18.92	1.5	6.86	20.8	2500	1.8	-180.1	4.5		B) ded bladder pump
	1733	18.92	2.0	6.83	20.6	2480	1.6	-183.7	3.9		C) non-ded bladder pump; or
	1735	18.92	2.5	6.81	20.3	2460	1.5	-190.8	3.7		*Standard groundwater sample:*
	1737	18.92	3.0	6.80	20.3	2440	1.4	-193.7	4.1		D) bailer due to limited column; or
	1740	18.92	3.5	6.79	20.2	2440	1.4	-196.0	3.6		E) recovery well cycling sample
	1743	18.92	4.0	6.79	20.1	2430	1.4	-198.8	3.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1745	MW-127	18.92	6.79	20.1	2430	1.4	-198.8	3.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Gauge only, per TRC 10/2/17

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-129
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

(2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	848	20.48	20.49	0.01	53.08	38.2	YES	YES	YES	YES		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5			Gauge only, per TRC					B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5					10/2/17			*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-129								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,Li)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#18A (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GOS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1248	NA	13.06	0.0	17.78	12.7	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB - 1A
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

(2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: AJS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1205	NA	14.55	0.0	33.50	25.8	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1210	14.59	0.5	7.32	18.7	4270	3.2	-4.1	10.5	colorless / clear	*Low-flow groundwater sample:*
	1213	14.60	1.0	7.10	17.7	4370	2.3	14.8	7.0		(A) peristaltic pump w/ ded tubing
	1215	14.60	1.5	6.96	17.6	4380	2.4	17.3	5.9		B) ded bladder pump
	1217	14.60	2.0	6.88	17.7	4390	2.4	20.8	5.0		C) non-ded bladder pump; or
	1220	14.60	2.5	6.86	17.8	4400	2.4	22.3	4.6		*Standard groundwater sample:*
	1223	14.60	3.0	6.84	17.9	4400	2.4	22.9	4.3		D) bailer due to limited column; or
	1225	14.60	3.5	6.83	18.0	4400	2.3	24.6	4.4		E) recovery well cycling sample
	1227	14.60	4.0	6.82	18.1	4400	2.3	29.1	4.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1230	KWB-1A	14.60	6.82	18.1	4400	2.3	29.1	4.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in sampling program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-1B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; stickup)

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1240	NA	16.25	0.0	33.92	Not Sampled	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-1C (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1243	NA	16.84	0.0	52.71	42.7	Yes	Yes	Yes	Yes		Weather: Partly Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Located ~25' N. of original KWB-10 well pad

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-10R
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GRS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1120	NA	15.65	0.0	29.46	22.0	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's
		# CONFIRMED: NO Measurable LNAPL										

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1125	15.75	0.5	7.23	19.3	1586	2.9	-123.7	3.7	colorless / clear / odor	*Low-flow groundwater sample:*
	1127	15.80	1.0	6.92	18.9	1596	1.9	-122.7	4.0		(A) peristaltic pump w/ ded tubing
	1130	15.82	1.5	6.82	18.8	1589	1.7	-125.4	3.2		B) ded bladder pump
	1133	15.83	2.0	6.73	18.7	1574	1.7	-125.7	2.9		C) non-ded bladder pump; or
	1135	15.83	2.5	6.69	18.7	1567	1.7	-125.3	2.9		*Standard groundwater sample:*
	1137	15.83	3.0	6.68	18.7	1568	1.6	-124.7	2.7		D) bailer due to limited column; or
	1140	15.83	3.5	6.67	18.7	1568	1.6	-124.3	2.4		E) recovery well cycling sample
	1143	15.83	4.0	6.67	18.8	1564	1.6	-124.2	2.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1145	KWB-10R	15.83	6.67	18.8	1564	1.6	-124.2	2.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-13 (2-in; stickup)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	853	NA	21.59	0.0	53.35	38.1	YES	YES	Yes	YES		Weather: Partly Cloudy, 80's
10/4/17	1200	NA	21.56									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1205	21.60	0.5	7.00	20.9	1889	2.9	-117.3	39.1	colorless / cloudy	*Low-flow groundwater sample:*
	1207	21.60	1.0	6.83	20.3	1888	2.2	-119.5	22.3	Colorless / clear	(A) peristaltic pump w/ ded tubing
	1210	21.60	1.5	6.75	19.9	1879	2.0	-121.7	19.2		B) ded bladder pump
	1213	21.60	2.0	6.67	19.6	1861	1.6	-125.3	16.3		C) non-ded bladder pump; or
	1215	21.60	2.5	6.65	19.5	1853	1.4	-128.3	11.8		*Standard groundwater sample:*
	1217	21.60	3.0	6.64	19.4	1853	1.4	-129.6	9.9		D) bailer due to limited column; or
	1220	21.60	3.5	6.63	19.4	1851	1.3	-128.4	9.0		E) recovery well cycling sample
	1223	21.60	4.0	6.63	19.3	1853	1.3	-128.5	8.7		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1225	MW-131	21.60	6.63	19.3	1853	1.3	-128.5	8.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-5
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CWJ

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	842	NA	21.09	0.0	37.68	30.7	YES	YES	YES	YES		Weather: partly cloudy, 70's
10/4/17	1115	NA	21.10									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1120	21.15	0.5	6.83	20.7	2500	3.4	-79.9	7.3	colorless / clear	*Low-flow groundwater sample:*
	1123	21.16	1.0	6.75	20.5	2490	2.6	-85.2	6.8		(A) peristaltic pump w/ ded tubing
	1125	21.16	1.5	6.72	20.2	2500	2.4	-93.2	6.1		B) ded bladder pump
	1127	21.16	2.0	6.69	20.1	2490	2.2	-99.2	5.7		C) non-ded bladder pump; or
	1130	21.16	2.5	6.67	20.0	2490	2.1	-104.9	5.3		*Standard groundwater sample:*
	1133	21.16	3.0	6.67	19.9	2500	2.1	-107.1	4.8		D) bailer due to limited column; or
	1135	21.16	3.5	6.67	19.9	2500	2.0	-107.5	4.6		E) recovery well cycling sample
	1137	21.16	4.0	6.67	19.9	2500	2.0	-107.9	4.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1140	KWB-5	21.16	6.67	19.9	2500	2.0	-107.9	4.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-111
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; Stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	835	NA	21.79	0.0	40.83	35.8	YES	YES	YES	YES		Weather: Cloudy, 70's
10/4/17	1030	NA	21.81									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1035	21.95	0.5	7.14	20.2	2560	3.6	-93.1	6.6	Colorless / clear	*Low-flow groundwater sample:*
	1037	21.95	1.0	6.89	20.1	2570	2.7	-80.3	5.2		(A) peristaltic pump w/ ded tubing
	1040	21.95	1.5	6.79	20.2	2560	2.4	-75.2	4.5		B) ded bladder pump
	1043	21.95	2.0	6.75	20.3	2560	2.2	-72.3	4.0		C) non-ded bladder pump; or
	1045	21.95	2.5	6.72	20.3	2550	2.1	-71.4	3.7		*Standard groundwater sample:*
	1047	21.95	3.0	6.69	20.2	2550	2.1	-70.2	3.2		D) bailer due to limited column; or
	1050	21.95	3.5	6.68	20.2	2540	2.0	-69.6	2.8		E) recovery well cycling sample
	1053	21.95	4.0	6.68	20.2	2540	2.0	-69.1	2.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1055	MW-111	21.95	6.68	20.2	2540	2.0	-69.1	2.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Absorbent sock in 1H16
No sock in 21416 or 21417

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-6
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS/BRH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	921	NA	18.81	0.0	36.44	27.4	Yes	Yes	Yes	Yes		Weather: Cloudy, 70s
10-4-17	1125	NA	18.80	0.0	36.44	27.4						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1130	18.86	0.5	6.80	22.1	2480	2.0	-307.6	6.9	clear w/ black tint,	*Low-flow groundwater sample:*
	1133	18.86	1.0	6.68	21.8	2470	1.3	-308.7	5.3	odor	(A) peristaltic pump w/ ded tubing
	1135	18.86	1.5	6.60	21.6	2470	1.0	-309.2	4.7		B) ded bladder pump
	1138	18.86	2.0	6.57	21.4	2460	1.0	-310.5	4.3		C) non-ded bladder pump; or
	1140	18.86	2.5	6.55	21.3	2460	0.9	-312.1	3.8		*Standard groundwater sample:*
	1143	18.86	3.0	6.54	21.2	2450	0.8	-313.0	3.6		D) bailer due to limited column; or
	1145	18.86	3.5	6.53	21.2	2450	0.8	-313.8	3.1		E) recovery well cycling sample
	1148	18.86	4.0	6.53	21.1	2440	0.7	-314.7	2.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	1150	KWB-6	18.86	6.53	21.1	2440	0.7	-314.7	2.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-112
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	916	18.85	19.15	0.30	37.54	32.5	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5			NOT SAMPLED due to well					B) ded bladder pump
			2.0			having LNAPL thickness					C) non-ded bladder pump; or
			2.5			≥ 0.03 ft.					*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-112								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-132
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	930	16.46	16.51	0.05	42.66	NA	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		NOT SAMPLED DUE TO WELL						B) ded bladder pump
			2.0		having LNAPL thickness						C) non-ded bladder pump; or
			2.5		≥ 0.03 Ft.						*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-132								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Located inside yellow vault; furthest south

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-57
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1310	NA	15.88	0.0	34.32	32.8	Yes	Yes	Yes	Yes		Weather: Partly cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1315	15.98	0.5	7.76	22.6	4520	3.3	61.6	5.0	Colorless / clear	*Low-flow groundwater sample:*
	1317	16.01	1.0	7.51	21.2	4530	2.6	66.9	5.0		(A) peristaltic pump w/ ded tubing
	1320	16.03	1.5	7.27	20.1	4530	2.2	73.8	5.7		B) ded bladder pump
	1323	16.04	2.0	7.14	19.6	4530	2.1	77.2	4.1		C) non-ded bladder pump; or
	1325	16.05	2.5	7.03	19.2	4530	1.9	79.0	3.0		*Standard groundwater sample:*
	1327	16.07	3.0	6.95	19.2	4520	1.8	79.9	2.7		D) bailer due to limited column; or
	1330	16.08	3.5	6.91	19.2	4520	1.8	81.3	2.2		E) recovery well cycling sample
	1333	16.09	4.0	6.89	19.2	4520	1.7	81.1	2.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1335	MW-57	16.09	6.89	19.2	4520	1.7	81.1	2.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

~ 32" corrugated stickup

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW - #11 - O (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: GDJ

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1345	NA	17.81	0.0	22.20	NA	YES	YES	YES	YES		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* Until further notice, do not address well in any way, per Navajo, 4-26-16

Jack Joy - Farmer
575-365-6042

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-9 (would be gauge-only in 2H17...)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Historically obstructed @ 15.11') (2-in; stickup) Initials: AMS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1348	NM	NM	NM	NM	NA	NM	NM	NM	NM		Weather: partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank-Rest-02
(+ ADDED TO COOLER ON 10/3/17)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-12A
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: ADS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1350	NA	18.48	0.0	25.03	24.9	YES	YES	YES	YES		Weather: partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1355	18.51	0.5	6.92	22.7	3250	4.1	73.7	3.2	colorless / clear	*Low-flow groundwater sample:*
	1357	18.51	1.0	6.95	21.0	3410	3.7	77.8	2.9		(A) peristaltic pump w/ ded tubing
	1400	18.51	1.5	6.93	20.1	3340	3.7	81.0	2.6		B) ded bladder pump
	1403	18.51	2.0	6.92	19.8	3280	3.6	82.3	2.4		C) non-ded bladder pump; or
	1405	18.51	2.5	6.91	19.5	3220	3.5	83.5	2.4		*Standard groundwater sample:*
	1407	18.51	3.0	6.91	19.3	3210	3.5	84.1	2.2		D) bailer due to limited column; or
	1410	18.51	3.5	6.90	19.2	3190	3.5	84.6	2.1		E) recovery well cycling sample
	1413	18.51	4.0	6.90	19.2	3180	3.5	84.8	2.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1415	KWB-12A	18.51	6.90	19.2	3180	3.5	84.8	2.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[* HM1 - dedicated bladder pump]

[+ Dup-Rest-05
+ EB-Rest-05
(both for same analyses)]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-12B
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: GDS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1435	NA	18.27	0.0	39.39	35.2	YES	YES	YES	YES		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1440	18.30	0.5	7.03	22.0	3300	4.3	-140.2	3.0	colorless / clear	*Low-flow groundwater sample:*
	1443	18.30	1.0	6.98	19.8	3310	3.6	-106.7	2.6	↓	A) peristaltic pump w/ ded tubing
	1445	18.30	1.5	6.93	19.4	3280	3.7	-90.2	2.3		(B) ded bladder pump
	1447	18.30	2.0	6.92	19.1	3290	3.7	-79.4	2.9		C) non-ded bladder pump; or
	1450	18.30	2.5	6.90	19.0	3280	3.6	-62.9	2.2		*Standard groundwater sample:*
	1453	18.30	3.0	6.88	19.0	3280	3.6	-53.7	1.8		D) bailer due to limited column; or
	1455	18.30	3.5	6.87	19.0	3270	3.6	-43.4	1.6		E) recovery well cycling sample
	1457	18.30	4.0	6.87	19.0	3270	3.5	-40.0	1.4		F) irrigation well grab sample
									↓		

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1500	KWB-12B	18.30	6.87	19.0	3270	3.5	-40.0	1.4	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
	1200	DUP-REST-05	18.30	6.87	19.0	3270	3.5	-40.0	1.4	Same as above	Same	Same
↓	1515	EB-REST-05	NA	—	—	—	—	—	→	Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-2R
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: GDS/BZH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	953	NA	18.80	0.0	39.41	32.4	YES	YES	YES	YES		Weather: Cloudy, 70s
10-4-17	1045	NA	18.80	0.0	39.41	32.4						

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1050	19.08	0.5	6.83	21.6	2840	1.9	-331.8	6.9	clear, odor	*Low-flow groundwater sample:*
	1053	19.10	1.0	6.75	21.2	2960	1.4	-337.2	3.7		(A) peristaltic pump w/ ded tubing
	1055	19.10	1.5	6.73	21.1	3010	1.2	-341.5	3.0		B) ded bladder pump
	1058	19.10	2.0	6.72	21.0	3040	1.1	-343.9	2.8		C) non-ded bladder pump; or
	1100	19.10	2.5	6.72	21.0	3060	1.0	-345.0	2.4		*Standard groundwater sample:*
	1103	19.10	3.0	6.71	20.9	3080	1.0	-346.1	1.9		D) bailer due to limited column; or
	1105	19.10	3.5	6.71	20.8	3100	0.9	-346.8	1.5		E) recovery well cycling sample
	1108	19.10	4.0	6.71	20.8	3110	0.9	-347.2	1.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	1110	KWB-2R	19.10	6.71	20.8	3110	0.9	-347.2	1.3	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-58
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade) Initials: GOS / ~~ERH~~

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1000	NA	17.73	0.0	33.06	25.6	YES	YES	YES	YES		Weather: Cloudy, 70s
10-4-17	1005	NA	*17.73	0.0	33.06	25.6						

↳ LNAPL sheen on probe

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1010	17.80	0.5	6.96	21.1	2150	2.8	-265.9	12.6	Clear, odor	*Low-flow groundwater sample:*
	1013	17.81	1.0	6.85	21.0	2160	1.6	-272.4	10.2		(A) peristaltic pump w/ ded tubing
	1015	17.81	1.5	6.80	21.0	2170	1.3	-279.3	9.8		B) ded bladder pump
	1018	17.81	2.0	6.74	21.0	2160	1.2	-285.1	9.3		C) non-ded bladder pump; or
	1020	17.81	2.5	6.72	20.9	2150	1.1	-290.3	9.1		*Standard groundwater sample:*
	1023	17.81	3.0	6.71	20.9	2140	1.0	-294.5	8.9		D) bailer due to limited column; or
	1025	17.81	3.5	6.70	20.9	2140	1.0	-297.1	8.8		E) recovery well cycling sample
	1028	17.81	4.0	6.70	20.8	2140	1.0	-298.8	8.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	1030	MW-58	17.81	6.70	20.8	2140	1.0	-298.8	8.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[* HM1-dedicated bladder pump]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: KWB-13 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade)

Initials: GPS

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	941	NA	21.20	0.0	33.10	30.1	Yes	Yes	Yes	Yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								(B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(Sign-in @ S. Crude)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-103 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: SCG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	900	NP	17.00	0.0	25.22	22.2	Yes	Yes	Yes	Yes		Weather: Overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-103								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(Sign-in @ S. crude)

Monitoring Well Purging and Sampling Record

+ Dup-Rest-02
+ EB-Rest-02
both for same analyses

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-104
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stick-up)

Initials: SCG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	905	NP	16.10	0.0	21.97	19.0	Yes	Yes	Yes	Yes		Weather: overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	910	16.24	0.5	6.61	23.9	1470	1.5	-222.8	5.1	colorless; clear	*Low-flow groundwater sample:*
	912	16.30	1.0	6.57	23.9	1464	1.0	-254.3	5.0		(A) peristaltic pump w/ ded tubing
	915	16.36	1.5	6.60	23.8	1466	0.9	-263.9	4.8		B) ded bladder pump
	917	16.41	2.0	6.63	23.9	1474	0.9	-270.1	4.6		C) non-ded bladder pump; or
	920	16.44	2.5	6.65	23.8	1480	0.9	-273.2	4.5		*Standard groundwater sample:*
	922	16.47	3.0	6.67	23.8	1485	0.9	-275.7	4.3		D) bailer due to limited column; or
	925	16.50	3.5	6.68	23.8	1487	0.9	-277.5	4.3		E) recovery well cycling sample
↓	927	16.53	4.0	6.69	23.9	1491	0.9	-278.5	4.3	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	930	MW-104	16.53	6.69	23.9	1491	0.9	-278.5	4.3	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1000	Dup-Rest-02	16.53	6.69	23.9	1491	0.9	-278.5	4.3	Same as above	same	same
↓	940	EB-Rest-02	NA	→	→	→	→	→	→	Same as above	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Bagged tube; tube stretched to outside of berm]

(Sign-in @ S. Crucil)

Absorbent sock in well 2H16
Absorbent sock in well 1H17 (stained)
@ 2H17

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-64
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup)

Initials: SCU

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1005	NP	18.20	0.0	34.08	26.6	yes	yes	yes	yes		Weather: overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1010	18.40	0.5	6.91	25.1	2510	2.4	-247.4	6.6	colorless, clear	*Low-flow groundwater sample:*
	1012	18.49	1.0	6.90	25.1	2520	1.9	-252.6	6.0		(A) peristaltic pump w/ ded tubing
	1015	18.53	1.5	6.90	25.1	2530	1.6	-257.2	5.6		B) ded bladder pump
	1017	18.55	2.0	6.89	25.1	2530	1.3	-260.6	5.4		C) non-ded bladder pump; or
	1020	18.56	2.5	6.89	25.1	2540	1.2	-262.7	5.1		*Standard groundwater sample:*
	1022	18.57	3.0	6.89	25.1	2550	1.1	-265.8	4.9		D) bailer due to limited column; or
	1025	18.58	3.5	6.88	25.1	2550	1.1	-267.6	4.8		E) recovery well cycling sample
↓	1027	18.59	4.0	6.89	25.1	2550	1.1	-268.0	4.8	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1030	MW-64	18.59	6.89	25.1	2550	1.1	-268.0	4.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Bagged tube; Located in front of Navajo storage shed area]

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-65
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: SCG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1040	NP	13.95	0.0	28.78	23.8	Yes	Yes	Yes	Yes		Weather: overcast, 70s

Well Purging Record *Residual staining on probe and well casing

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1050	13.97	0.5	6.75	26.5	2190	2.0	-165.5	8.6	colorless; clear; odor	Low-flow groundwater sample:
	1053	13.98	1.0	6.70	26.6	2190	1.6	-164.1	7.5		(A) peristaltic pump w/ ded tubing
	1055	13.99	1.5	6.67	26.6	2180	1.1	-164.9	7.2		B) ded bladder pump
	1057	13.99	2.0	6.65	26.6	2180	1.1	-165.2	7.0		C) non-ded bladder pump; or
	1100	13.99	2.5	6.64	26.6	2170	1.1	-165.2	6.7		Standard groundwater sample:
	1102	13.99	3.0	6.64	26.6	2170	1.1	-165.1	6.2		D) bailer due to limited column; or
	1105	13.99	3.5	6.63	26.7	2170	1.0	-165.2	5.9		E) recovery well cycling sample
	1107	13.99	4.0	6.64	26.7	2170	1.0	-165.2	5.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1110	MW-65	13.99	6.64	26.7	2170	1.0	-165.2	5.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-5R (Gauge only) (Gauge to top of guide pipe)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information Active RW; above-grade vault; sampled by port, when sampled. Initials: SCV

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1125	14.75	14.86	0.11	NM (pumps in well) Formerly reported TD = 35.30 ft-TOC	24.0	Yes	Yes	Yes	Yes		Weather: Overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								(E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-102
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: SCY

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1135	NP	14.12	0.0	26.45	21.3	Yes	Yes	Yes	Yes		Weather: Overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1140	14.15	0.5	6.78	25.5	2370	2.2	-274.0	7.6	colorless; clear	*Low-flow groundwater sample:*
	1142	14.15	1.0	6.81	25.4	2370	1.8	-279.7	7.4		(A) peristaltic pump w/ ded tubing
	1145	14.15	1.5	6.81	25.3	2380	1.5	-283.6	7.2		B) ded bladder pump
	1147	14.15	2.0	6.81	25.3	2380	1.3	-286.5	7.0		C) non-ded bladder pump; or
	1150	14.15	2.5	6.80	25.2	2380	1.3	-288.1	7.0		*Standard groundwater sample:*
	1152	14.15	3.0	6.80	25.2	2380	1.2	-291.8	6.9		D) bailer due to limited column; or
	1155	14.15	3.5	6.79	25.2	2380	1.2	-292.3	6.8		E) recovery well cycling sample
	1157	14.15	4.0	6.79	25.2	2380	1.2	-293.6	6.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1200	MW-102	14.15	6.79	25.2	2380	1.2	-292.6	6.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tubing

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[Gauge/Sample through labeled guide-pipe

Well: RW-4 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest
Active RW in covered doghouse.

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCA

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1220	NP	12.62	0.0	36.62	31.6	Yes	Yes	Yes	Yes		Weather: overcast 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tubing

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge/Sample through labeled guide-pipe

Well: RW-6 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest
Active RW in covered doghouse.

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1210	13.65	13.74	0.09	34.90	30.0	Yes	Yes	Yes	Yes		Weather: overcast, 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Position is marked on adjacent fence; ~ 4' N. of fence; may be covered by silt/gravel]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-99
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; at-grade) Initials: SLG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1230	NP	15.47	0.0	27.80	22.8	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1240	15.55	0.5	6.69	26.0	2210	1.9	-280.3	7.7	colorless; clear	*Low-flow groundwater sample:*
	1242	15.57	1.0	6.68	25.7	2220	1.6	-285.8	5.9		(A) peristaltic pump w/ ded tubing
	1245	15.58	1.5	6.68	25.5	2230	1.5	-289.1	5.7		B) ded bladder pump
	1247	15.59	2.0	6.68	25.3	2230	1.4	-292.6	5.5		C) non-ded bladder pump; or
	1250	15.59	2.5	6.68	25.2	2230	1.4	-294.2	5.4		*Standard groundwater sample:*
	1252	15.59	3.0	6.68	25.2	2230	1.4	-295.2	5.4		D) bailer due to limited column; or
	1255	15.59	3.5	6.68	25.2	2230	1.4	-295.6	5.3		E) recovery well cycling sample
	1257	15.59	4.0	6.68	25.2	2230	1.3	-295.7	5.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1300	MW-99	15.59	6.68	25.2	2230	1.3	-295.7	5.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-66
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; at-grade)

Initials: SLH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1315	NP	14.82	0.0	29.80	24.6	Yes	Yes	Yes	Yes	(cracked pad)	Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1320	14.97	0.5	6.79	25.5	1719	2.2	-191.2	22.0	colorless; clear	*Low-flow groundwater sample:*
	1322	15.03	1.0	6.77	25.1	1723	2.0	-186.1	25.1		(A) peristaltic pump w/ ded tubing
	1325	15.05	1.5	6.76	24.9	1725	1.9	-184.5	26.5		B) ded bladder pump
	1327	15.07	2.0	6.76	24.6	1725	1.8	-182.8	26.6		C) non-ded bladder pump; or
	1330	15.08	2.5	6.75	24.5	1724	1.8	-181.9	26.7		*Standard groundwater sample:*
	1332	15.08	3.0	6.76	24.5	1724	1.7	-180.4	25.2		D) bailer due to limited column; or
	1335	15.08	3.5	6.75	24.6	1724	1.7	-179.5	25.0		E) recovery well cycling sample
	1337	15.08	4.0	6.75	24.6	1724	1.7	-179.1	24.8		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1340	MW-66	15.08	6.75	24.6	1724	1.7	-179.1	24.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

(6-in casing; stickup; PVC casing extends upward through a berm)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-28
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SLG

Well Inspection Information

Extends through gravel berm; no pad possible

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1355	NP	20.74	0.0	34.55	30.2	Yes	Issue (6-in PVC (shattered at top w/ 0.65-ft slip collar over it)	Issue	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1400	20.79	0.5	6.59	28.7	3110	2.5	-294.1	6.3	colorless; clear	*Low-flow groundwater sample:*
	1402	20.84	1.0	6.59	28.2	3140	2.3	-304	6.0		(A) peristaltic pump w/ ded tubing
	1405	20.88	1.5	6.59	28.0	3150	2.2	-304.3	5.7		B) ded bladder pump
	1407	20.90	2.0	6.59	27.7	3140	2.2	-308.5	5.5		C) non-ded bladder pump; or
	1410	20.92	2.5	6.59	27.5	3110	2.2	-312.9	5.2		*Standard groundwater sample:*
	1412	20.94	3.0	6.59	27.4	3090	2.2	-315.4	5.0		D) bailer due to limited column; or
	1415	20.96	3.5	6.60	27.3	3090	2.2	-315.7	5.0		E) recovery well cycling sample
	1417	20.98	4.0	6.60	27.3	3080	2.2	-315.9	5.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1420	MW-28	20.98	6.60	27.3	3080	2.2	-318.9	5.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-59 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

(4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1515	NP	10.00	0.0	32.72	25.3	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ Dup - Rest - 04
+ EB - Rest - 04
(both for same analyses)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-60
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; stickup) Initials: SCH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1520	NP	11.23	0.0	37.78	26.7	Yes	Yes	Yes	Yes		Weather pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1525	11.40	0.5	6.68	29.0	3800	2.6	-294.0	5.5	colorless; clear	*Low-flow groundwater sample:*
	1527	11.46	1.0	6.69	28.6	3870	2.4	-296.5	4.5		(A) peristaltic pump w/ ded tubing
	1530	11.51	1.5	6.69	28.6	3900	2.3	-298.0	4.0		B) ded bladder pump
	1532	11.52	2.0	6.69	28.5	3920	2.3	-299.0	3.8		C) non-ded bladder pump; or
	1535	11.53	2.5	6.69	28.4	3920	2.3	-299.5	3.6		*Standard groundwater sample:*
	1537	11.53	3.0	6.69	28.4	3940	2.2	-300.9	3.6		D) bailer due to limited column; or
	1540	11.53	3.5	6.69	28.3	3950	2.1	-301.1	3.6		E) recovery well cycling sample
	1542	11.53	4.0	6.69	28.3	3950	2.1	-301.3	3.6		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1545	MW-60	11.53	6.69	28.3	3950	2.1	-301.3	3.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
	1200	Dup-Rest-04	11.53	6.69	28.3	3950	2.1	-301.3	3.6	Same as above	Same	Same
	1550	EB-Rest-04	NA							Same as above	Same	Same

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

(Gauge only, per TRC 10/2/17)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-107
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCM

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1225	NP	11.68	0.0	19.05	17.1	Yes	Yes	Yes	Yes		Weather: Pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0			GAUGE					C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0			ONLY,	per TRC				D) bailer due to limited column; or
			3.5				10/2/17				E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-107								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[Located 15' NW of NW corner of berm, if buried in future events]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-128
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade) Initials: SCG

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1435	NP	14.01	0.0	35.35	25.4	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

(Uncovered from road-gravel)

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1440	14.04	0.5	6.68	25.6	2020	2.1	-214.5	22.1	colorless; clear	*Low-flow groundwater sample:*
	1442	14.04	1.0	6.67	25.3	2010	1.8	-201.3	21.5		(A) peristaltic pump w/ ded tubing
	1445	14.04	1.5	6.67	25.2	2010	1.8	-199.7	20.5		B) ded bladder pump
	1447	14.04	2.0	6.67	25.1	2010	1.7	-196.2	19.8		C) non-ded bladder pump; or
	1450	14.04	2.5	6.67	25.0	2000	1.7	-191.2	19.4		*Standard groundwater sample:*
	1452	14.04	3.0	6.67	24.9	2000	1.6	~185.7	19.4		D) bailer due to limited column; or
	1455	14.04	3.5	6.67	24.9	2000	1.6	-183.9	19.2		E) recovery well cycling sample
	1457	14.04	4.0	6.67	24.9	2000	1.6	~182.9	19.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1500	MW-128	14.04	6.67	24.9	2000	1.6	-182.9	19.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-125
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: SCG

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1620	NP	11.29	0.0	28.31	23.5	Yes	Yes	Yes	Yes		Weather: pt. cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1625	11.35	0.5	6.98	26.8	4460	2.8	-178.3	18.5	colorless; clear	*Low-flow groundwater sample:*
	1627	11.35	1.0	6.90	26.1	4560	2.5	-173.1	13.0	↓	(A) peristaltic pump w/ ded tubing
	1630	1135	1.5	6.89	25.9	4570	2.5	-171.0	9.8	↓	B) ded bladder pump
	1632	11.35	2.0	6.87	25.7	4590	2.5	-168.3	6.9	↓	C) non-ded bladder pump; or
	1635	11.35	2.5	6.86	25.5	4600	2.4	-162.1	6.1	↓	*Standard groundwater sample:*
	1637	11.35	3.0	6.85	25.4	4620	2.4	-150.7	5.8	↓	D) bailer due to limited column; or
	1640	11.35	3.5	6.84	25.3	4620	2.4	-148.0	5.7	↓	E) recovery well cycling sample
↓	1642	11.35	4.0	6.84	25.4	4620	2.4	-146.2	5.7	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1645	MW-125	11.35	6.84	25.4	4620	2.4	-146.2	5.7	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Bagged tubing extension]

Monitoring Well Purging and Sampling Record

Trip Blank - Rest - 03

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-116
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup)

Initials: SCM

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1705	NP	8.13	0.0	27.63	20.0	Yes	Yes	Yes	Yes		Weather: pt. cloudy; 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1710	8.15	0.5	7.11	22.4	3690	2.4	18.0	29.1	colorless; clear	*Low-flow groundwater sample:*
	1712	8.15	1.0	7.00	21.7	3710	1.8	20.4	32.5		(A) peristaltic pump w/ ded tubing
	1715	8.15	1.5	6.98	21.6	3710	1.7	20.8	29.4		B) ded bladder pump
	1717	8.15	2.0	6.95	21.3	3710	1.6	21.3	27.1		C) non-ded bladder pump; or
	1720	8.15	2.5	6.94	21.1	3710	1.5	21.4	26.8		*Standard groundwater sample:*
	1722	8.15	3.0	6.94	21.1	3710	1.5	21.5	26.7		D) bailer due to limited column; or
	1725	8.15	3.5	6.94	21.1	3710	1.5	21.5	25.1		E) recovery well cycling sample
	1727	8.15	4.0	6.94	21.0	3710	1.5	21.4	24.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1730	MW-11b	8.15	6.94	21.0	3710	1.5	21.4	24.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

N. side of dirt road; in-line w/ westernmost row of pecan trees; position labeled on fence pole (12' from fenceline)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-46R
Event: Fall 2017 (Semiannual)
Area of Concern: TMD

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade) Initials: SCY

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1745	NP	5.18	0.0	19.36	14.1	Yes	Yes	Yes	Yes		Weather: pt. cloudy; 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1750	5.20	0.5	6.96	25.7	4070	2.2	-23.5	8.0	colorless; clear	*Low-flow groundwater sample:*
	1752	5.20	1.0	6.90	25.4	4090	1.9	-33.8	7.5		(A) peristaltic pump w/ ded tubing
	1755	5.20	1.5	6.86	25.2	4100	1.7	-46.5	6.6		B) ded bladder pump
	1757	5.20	2.0	6.85	25.1	4100	1.5	-58.1	6.3		C) non-ded bladder pump; or
	1800	5.20	2.5	6.84	25.0	4110	1.5	-71.0	6.3		*Standard groundwater sample:*
	1802	5.20	3.0	6.83	24.9	4110	1.4	-78.6	6.2		D) bailer due to limited column; or
	1805	5.20	3.5	6.83	24.9	4110	1.4	-80.9	6.2		E) recovery well cycling sample
	1807	5.20	4.0	6.83	24.9	4110	1.4	-82.7	6.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1810	MW-46R	5.20	6.83	24.9	4100	1.4	-82.7	6.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

[HMI - dedicated bladder pump]

NO ACTIVITY IN FALL 2017 EVENT

(furthest west "city well")

Upgradient

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-3R
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; at-grade)

Initials:

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

NO ACTIVITY IN FALL 2017 EVENT

(Near park)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-4
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; at-grade) Initials:

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Upgradient

NO ACTIVITY IN FALL 2017 EVENT

(N. of elementary School)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: UG-1
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

(4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials:

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Upgradient

NO ACTIVITY IN FALL 2017 EVENT

E-W alley, immediately NW of Artesia Hotel

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: UG-2
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in ; at-grade)

Initials:

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
												Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)					HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Trip Blank - Rest - 04

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-101
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1210	ND	12.48	0.0	16.85	23.5	yes	yes	yes	yes		Weather: PT/Cloudy 80°
10/3/17	1710	ND	12.48	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1715	12.50	0.5	7.04	24.7	2220	1.7	-174.8	1.1	Clear	*Low-flow groundwater sample:*
	1717	12.50	1.0	7.00	24.6	2190	1.5	-173.7	1.2		(A) peristaltic pump w/ ded tubing
	1720	12.50	1.5	6.96	24.5	2180	1.3	-173.0	1.0		B) ded bladder pump
	1723	12.50	2.0	6.86	24.3	2120	1.2	-171.2	0.9		C) non-ded bladder pump; or
	1725	12.50	2.5	6.82	24.2	2100	1.1	-170.7	0.8		*Standard groundwater sample:*
	1727	12.50	3.0	6.80	24.0	2080	1.0	-170.6	0.7		D) bailer due to limited column; or
	1730	12.50	3.5	6.79	24.0	2080	0.9	-170.6	0.7		E) recovery well cycling sample
↓	1733	12.50	4.0	6.78	23.9	2070	0.9	170.7	0.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1735	MW-101	12.50	6.78	23.9	2070	0.9	-170.7	0.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-105
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in ; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1250	NP	9.26	0.0	17.20	14.2	yes	yes	yes	yes		Weather: pt/cloudy 80s
10/4/17	800	NP	9.33									

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	805	9.38	0.5	7.04	23.5	1712	1.7	-344.2	17.2	Clear/odor	*Low-flow groundwater sample:*
	807	9.38	1.0	7.03	23.7	1718	1.5	-350.7	17.4		(A) peristaltic pump w/ ded tubing
	810	9.38	1.5	7.02	23.7	1722	1.3	-351.8	17.6		B) ded bladder pump
	813	9.38	2.0	7.02	23.8	1727	1.2	-354.5	18.1		C) non-ded bladder pump; or
	815	9.38	2.5	7.01	23.8	1729	1.1	-355.8	19.6		*Standard groundwater sample:*
	817	9.38	3.0	7.00	23.8	1730	1.0	-356.1	20.1		D) bailer due to limited column; or
	820	9.38	3.5	7.00	23.8	1731	0.9	-357.4	20.7		E) recovery well cycling sample
	823	9.38	4.0	6.99	23.8	1731	0.8	-358.1	19.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	825	mw-105	9.38	6.99	23.8	1731	0.8	-358.1	19.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tube

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge or sample through labeled 1-in guide-pipe

Well: RW-2 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (Inside doghouse)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1300	NP	11.48	0.0	36.13	31.1	yes	yes	yes	yes		Weather: PT/Cloudy 85

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-61
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1310	NP	11.57	0.0	29.30	29.30	yes	yes	yes	yes	Broken	Weather: PT/Cloudy 80°
10/4/17	850	NP	11.63	0.0							PAD	

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	955	11.81	0.5	7.08	24.3	2830	1.0	-351.6	8.7	Clear	*Low-flow groundwater sample:*
	957	11.98	1.0	7.08	24.4	2890	0.8	-354.6	8.2		(A) peristaltic pump w/ ded tubing
	900	12.09	1.5	7.05	24.5	2920	0.7	-356.0	6.0		B) ded bladder pump
	903	12.17	2.0	7.05	24.5	2930	0.6	-358.9	5.8		C) non-ded bladder pump; or
	905	12.27	2.5	7.02	24.4	2940	0.6	-360.7	4.0	Reduced purge	*Standard groundwater sample:*
	910	12.37	3.0	7.01	24.4	2950	0.6	-361.9	3.9	rate to 0.1 L/min	D) bailer due to limited column; or
	915	12.47	3.5	7.01	24.4	2960	0.5	-362.5	2.3	↓	E) recovery well cycling sample
↓	920	12.50	4.0	7.00	24.3	2960	0.5	-363.9	2.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv.	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	925	MW-61	12.50	7.00	24.3	2960	0.5	-363.9	2.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Ce,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-62
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAS

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1320	NP	12.88	0.0	29.30	21.5	yes	yes	yes	yes		Weather: PT/Cloudy 80s
10-4-17	1000	NP	12.95	0.0								

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1005	13.11	0.5	6.88	23.4	3530	1.2	-359.2	3.8	clear / odor	*Low-flow groundwater sample:*
	1007	13.21	1.0	6.84	23.4	3580	1.0	-364.0	3.0		(A) peristaltic pump w/ ded tubing
	1010	13.28	1.5	6.82	23.4	3580	0.9	-366.2	2.8		B) ded bladder pump
	1013	13.33	2.0	6.81	23.4	3590	0.8	-367.3	2.8		C) non-ded bladder pump; or
	1015	13.37	2.5	6.80	23.5	3600	0.8	-368.3	2.9		*Standard groundwater sample:*
	1017	13.41	3.0	6.79	23.5	3610	0.8	-368.0	3.0		D) bailer due to limited column; or
	1020	13.44	3.5	6.79	23.5	3620	0.8	-368.6	3.7		E) recovery well cycling sample
↓	1023	13.48	4.0	6.78	23.5	3630	0.8	-369.0	3.6	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-4-17	1025	MW-62	13.48	6.78	23.5	3630	0.8	-369.0	3.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

(Gauge only, per TRC 10/2/17)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-93
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; at-grade) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1330	NP	7.37	0.0	20.23	15.9	yes	yes	yes	yes		Weather: PC/Cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0			Gauge Only, per TRC					(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0						10/2/17		C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-93								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-43
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (6-in; stickup) Initials: TAB/SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1410	NP	9.75	0.0	19.67	16.5	yes	Issue*	yes	yes	NO PAD	Weather: PM/Cloudy 80°
10/4/17	915	NA	9.94	0.0								Cloudy 70's

*(No protective outer casing)

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	920	9.99	0.5	6.99	22.7	4440	1.8	-329.5	13.5	clear w/ black particles	*Low-flow groundwater sample:*
	922	9.99	1.0	7.04	22.7	4480	1.5	-335.6	10.9		(A) peristaltic pump w/ ded tubing
	925	9.99	1.5	7.10	22.7	4510	1.3	-340.2	9.8		B) ded bladder pump
	927	9.99	2.0	7.14	22.6	4520	1.2	-342.8	9.1		C) non-ded bladder pump; or
	930	9.99	2.5	7.16	22.6	4520	1.2	-343.7	8.6		*Standard groundwater sample:*
	932	9.99	3.0	7.17	22.6	4530	1.1	-344.1	8.3		D) bailer due to limited column; or
	935	9.99	3.5	7.17	22.6	4530	1.1	-344.9	7.9		E) recovery well cycling sample
↓	937	9.99	4.0	7.18	22.6	4530	1.1	-345.2	7.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	940	MW-43	9.99	7.18	22.6	4530	1.1	-345.2	7.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-137
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade) Initials: TAB / SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1400	NP	7.93	0.0	29.60	24.6	yes	yes	yes	yes		Weather: AM/cloudy 80s
10/4/17	1130	NA	8.15	0.0								cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1135	8.15	0.5	6.78	27.3	4100	3.0	-350.2	12.1	clear; odor	*Low-flow groundwater sample:*
	1137	8.15	1.0	6.83	26.9	4520	2.5	-357.8	10.9		(A) peristaltic pump w/ ded tubing
	1140	8.15	1.5	6.87	26.5	4610	2.2	-362.9	10.1		B) ded bladder pump
	1142	8.15	2.0	6.89	26.4	4680	2.0	-365.1	9.1		C) non-ded bladder pump; or
	1145	8.15	2.5	6.91	26.4	4720	1.9	-367.5	8.7		*Standard groundwater sample:*
	1147	8.15	3.0	6.92	26.4	4740	1.9	-370.1	8.6		D) bailer due to limited column; or
	1150	8.15	3.5	6.92	26.3	4750	1.8	-372.8	7.9		E) recovery well cycling sample
↓	1152	8.15	4.0	6.93	26.3	4760	1.8	-373.5	7.5	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1155	MW-137	8.15	6.93	26.3	4760	1.8	-373.5	7.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-138
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: TAB/SCD

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1350	NP	9.49	0.0	24.81	19.8	yes	yes	yes	yes		Weather: AM/cloudy 80s
10/4/17	1045	NA	9.71	0.0								PM/cloudy 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1050	9.74	0.5	6.78	29.1	2790	1.9	-375.4	18.1	clear w/ black particles	*Low-flow groundwater sample:*
↓	1052	9.74	1.0	6.83	29.1	2820	1.6	-370.1	13.5	↓	(A) peristaltic pump w/ ded tubing
	1055	9.74	1.5	6.85	29.0	2850	1.4	-368.5	12.1		B) ded bladder pump
	1057	9.74	2.0	6.87	29.0	2870	1.2	-367.1	10.8		C) non-ded bladder pump; or
	1100	9.74	2.5	6.88	29.1	2880	1.1	-366.6	10.3		*Standard groundwater sample:*
	1102	9.74	3.0	6.88	29.2	2880	1.1	-365.4	9.7		D) bailer due to limited column; or
	1105	9.74	3.5	6.89	29.2	2890	1.0	-364.9	9.5		E) recovery well cycling sample
↓	1107	9.74	4.0	6.89	29.2	2890	1.0	-364.2	8.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1110	MW-138	9.74	6.89	29.2	2890	1.0	-364.2	8.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-23
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(6-in; stickup)

Initials: TAB/SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1340	NP	12.88	0.0	23.10	17.9	YES	Tbg*	YES	YES		Weather: PT/Cloudy, 85°
10/4/17	1000	NA	13.10	0.0								

Well Purging Record

* No protective casing; but 6" Expandable locking cap is locked

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1005	13.18	0.5	7.39	27.1	2890	2.2	-341.5	15.8	Clear; black tint odor	Low-flow groundwater sample:
	1007	13.22	1.0	7.34	27.1	2860	1.7	-343.8	13.2		(A) peristaltic pump w/ ded tubing
	1010	13.26	1.5	7.29	27.2	2820	1.5	-345.2	12.9		B) ded bladder pump
	1012	13.29	2.0	7.25	27.3	2800	1.3	-345.9	11.7		C) non-ded bladder pump; or
	1015	13.32	2.5	7.21	27.3	2780	1.1	-346.2	10.9		Standard groundwater sample:
	1017	13.35	3.0	7.20	27.2	2770	1.0	-346.8	9.8		D) bailer due to limited column; or
	1020	13.38	3.5	7.19	27.2	2760	1.0	-346.9	9.1		E) recovery well cycling sample
↓	1022	13.41	4.0	7.18	27.2	2760	1.0	-347.0	8.9	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1025	MW-23	13.41	7.18	27.2	2760	1.0	-347.0	8.9	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

+ DUP-TEL-01 (for same analyses)

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-4
Event: Fall 2017 (Semiannual)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	900	*	9.04	0.0	27.27	22.2	yes	yes	yes	yes		Weather: pt/cloudy 60°

Well Purging Record * unmeasurable Trace of LNAPL

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	905	9.20	0.5	6.08	22.0	4730	0.8	-160.4	23.1	clear/BlackTint	*Low-flow groundwater sample:*
	907	9.20	1.0	6.14	22.0	4670	0.8	-163.3	10.2	odor/sheen	(A) peristaltic pump w/ ded tubing
	910	9.20	1.5	6.36	22.0	4660	0.8	-181.1	9.7		B) ded bladder pump
	913	9.20	2.0	6.38	22.0	4640	0.7	-182.9	8.8		C) non-ded bladder pump; or
	915	9.20	2.5	6.40	22.0	4630	0.7	-184.7	7.9		*Standard groundwater sample:*
	917	9.20	3.0	6.41	22.0	4620	0.7	-186.3	7.7		D) bailer due to limited column; or
	920	9.20	3.5	6.41	22.0	4610	0.6	-187.1	7.4		E) recovery well cycling sample
↓	923	9.20	4.0	6.42	22.0	4600	0.6	-187.3	7.0	↓ ↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	925	TEL-4	9.20	6.42	22.0	4600	0.6	-187.3	7.0	DRO	HCL	8015M
↓										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	1000	DUP-TEL-01	9.20	6.42	22.0	4600	0.6	-187.3	7.0	same as above	same	same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ EB-TEL-01 (for same analyses)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-3
Event: Fall 2017 (Semiannual)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	940	8.79	8.84	0.05	27.19	22.2	yes	yes	yes	yes		Weather: pt/cloudy 78°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17			0.5								*Low-flow groundwater sample:*
			1.0	NOT	sampled	due	to	LNAPL	≥ 0.03		(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		TEL-3								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	950	EB-TEL-01	NA	→						Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-2
Event: Fall 2017 (Semiannual)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; Stickup)

Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1010	NP	9.63	0.0	27.20	22.1	yes	yes	yes	yes		Weather: Cloudy 78°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1015	9.70	0.5	6.91	22.3	3590	1.2	-296.2	3.8	Clear/odor	*Low-flow groundwater sample:*
	1017	9.70	1.0	6.96	22.2	3600	1.0	-299.5	3.5		(A) peristaltic pump w/ ded tubing
	1020	9.70	1.5	6.95	22.1	3600	1.0	-306.7	2.6		B) ded bladder pump
	1023	9.70	2.0	6.92	22.1	3610	0.9	-308.9	2.4		C) non-ded bladder pump; or
	1025	9.70	2.5	6.90	22.0	3620	0.8	-310.1	2.2		*Standard groundwater sample:*
	1027	9.70	3.0	6.89	22.0	3630	0.7	-311.8	1.7		D) bailer due to limited column; or
	1030	9.70	3.5	6.88	22.0	3620	0.8	-312.0	1.6		E) recovery well cycling sample
	1033	9.70	4.0	6.88	22.0	3620	0.8	-312.7	1.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1035	TEL-2	9.70	6.88	22.0	3620	0.8	-312.7	1.5	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Trip Blank - TEL-01

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: TEL-1
Event: Fall 2017 (Semiannual)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; stickup)

Initials: AB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1100	NF	8.79	0.0	27.00	22.9	yes	yes	yes	yes		Weather: Cloudy 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1105	9.03	0.5	7.23	22.2	3,170	1.1	-305.2	2.0	Clear	*Low-flow groundwater sample:*
	1107	9.03	1.0	7.21	22.2	3,160	0.9	-306.1	1.8		(A) peristaltic pump w/ ded tubing
	1110	9.03	1.5	7.20	22.1	3160	0.8	-309.9	1.6		B) ded bladder pump
	1113	9.03	2.0	7.18	22.0	3170	0.7	-312.5	1.5		C) non-ded bladder pump; or
	1115	9.03	2.5	7.17	22.0	3160	0.6	-314.1	1.4		*Standard groundwater sample:*
	1117	9.03	3.0	7.15	21.9	3160	0.6	-316.2	1.6		D) bailer due to limited column; or
	1120	9.03	3.5	7.14	21.9	3160	0.6	-317.9	1.7		E) recovery well cycling sample
	1123	9.03	4.0	7.14	21.8	3150	0.5	-319.2	2.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1125	TEL-1	9.03	7.14	21.8	3150	0.5	-319.2	2.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-39
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in stainless steel; short stickup) Initials: TAB/SCD

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1420	NP	9.31	0.0	25.44	20.4	yes	yes	yes	yes		Weather: Mt/cloudy 80s
10/4/17	830	NP	9.47	0.0	25.44	20.4						Cloudy 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	835	9.60	0.5	7.08	22.0	4090	2.1	-315.6	8.7	clear; black tint	*Low-flow groundwater sample:*
	837	9.62	1.0	7.15	21.9	4020	1.6	-320.8	7.5	odor	(A) peristaltic pump w/ ded tubing
	840	9.62	1.5	7.20	21.8	3980	1.4	-322.5	6.8		B) ded bladder pump
	842	9.62	2.0	7.23	21.7	3940	1.3	-324.1	6.3		C) non-ded bladder pump; or
	845	9.62	2.5	7.25	21.7	3910	1.3	-325.4	5.9		*Standard groundwater sample:*
	847	9.62	3.0	7.26	21.7	3900	1.2	-327.5	5.1		D) bailer due to limited column; or
	850	9.62	3.5	7.26	21.7	3890	1.2	-328.2	4.8		E) recovery well cycling sample
	852	9.62	4.0	7.27	21.7	3890	1.2	-328.1	4.2		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	855	MW-39	9.62	7.27	21.7	3890	1.2	-328.1	4.2	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Prior to 2H16, this well was an above-grade (stickup) completion; Area has since been backfilled with a couple feet of soil.

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-98
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas
Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1200	NP	8.73	0.0	25.60	21.5	yes	yes	yes	yes		Weather: PT/Cloudy 70s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17	1205	8.79	0.5	7.12	24.5	3180	0.9	-363.3	5.2	clear/odor	*Low-flow groundwater sample:*
	1207	8.79	1.0	7.01	24.4	3190	0.7	-361.9	5.0		(A) peristaltic pump w/ ded tubing
	1210	8.79	1.5	7.00	24.3	3180	0.7	-368.8	4.3		B) ded bladder pump
	1213	8.79	2.0	6.96	24.2	3180	0.7	-371.4	4.0		C) non-ded bladder pump; or
	1215	8.79	2.5	6.95	24.2	3190	0.6	-372.2	3.8		*Standard groundwater sample:*
	1217	8.79	3.0	6.94	24.2	3200	0.6	-373.1	3.6		D) bailer due to limited column; or
	1220	8.79	3.5	6.92	24.2	3200	0.6	-374.9	3.5		E) recovery well cycling sample
	1223	8.79	4.0	6.90	24.2	3200	0.7	-375.5	3.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/3/17	1225	MW-98	8.79	6.90	24.2	3200	0.7	-375.5	3.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Old RW-10 permanently covered by heavy steel box. Current RW-10 location should be the stand-pipe located ~50' S. of former RW-10 location, per Navajo.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-10 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1430	NA	9.14	0.0	22.49	17.5	Yes	Yes	Issue	Yes		Weather: PT/C/Dry 80s

↳ PVC cap on standpipe; unlockable

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-40 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1442	NP	7.54	0.0	24.75	21.8	yes	yes	yes	yes		Weather:

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-41 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: TA TB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1445	NP	7.10	0.0	21.56	18.6	yes	yes	yes	yes		Weather: PT/Cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Old RW-9 permanently covered by heavy steel box. Current RW-9 location should be the stand-pipe located ~50' E. of former RW-9 location, per Navajo.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-9 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1440	NA	9.44	0.0	21.83	16.8	YES	YES	Issue*	YES		Weather: Ft/Cloudy 80s

* PVC Cap on standpipe; unlockable

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-42 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (2-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1450	NP	9.86	0.0	24.32	21.3	yes	yes	yes	yes		Weather: PT/cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-29
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (6-in PVC ; stickup) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1530	NP	11.65	0.0	22.00	16.7	Internal Threaded cap	yes	Issue → no protective casing unable to lock	yes	* → Non standard Red	Weather: pt/cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1535	11.66	0.5	7.30	26.1	3500	1.1	-268.0	2.8	Clear	*Low-flow groundwater sample:*
	1537	11.67	1.0	7.21	25.7	3500	0.8	-279.8	2.0		(A) peristaltic pump w/ ded tubing
	1540	11.67	1.5	7.16	25.4	3500	0.8	-285.5	1.9		B) ded bladder pump
	1543	11.67	2.0	7.14	25.3	3510	0.8	-290.1	1.6		C) non-ded bladder pump; or
	1545	11.67	2.5	7.12	25.3	3510	0.7	-290.9	1.5		*Standard groundwater sample:*
	1547	11.67	3.0	7.10	25.0	3510	0.7	-291.8	1.2		D) bailer due to limited column; or
	1550	11.67	3.5	7.08	25.0	3520	0.6	-293.4	1.2		E) recovery well cycling sample
	1553	11.67	4.0	7.07	25.0	3520	0.6	-294.4	1.0	"	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1555	MW-29	11.67	7.07	25.0	3520	0.6	-294.4	1.0	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO3~~	~~6010/6020 and/or 7470~~
										~~,Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW - #16B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (8 3/8" OD bell-top stickup; PVC) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1500	NP	11.72	0.0	17.70	14.7	yes	yes	Issue	yes	NID protective	Weather: pt/cloudy 80s

Well Purging Record * outer protective post bent over and broken well pad Casing present

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-30 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: TAB

Well Inspection Information

(stickup)

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1520	NP	9.43	0.0	23.50	Not Sampled	yes	yes	yes	yes		Weather: pt/cloudy 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Gauge only, per TRC 10/2/17

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: MW-56
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup)

Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1510	NP	10.32	0.0	26.50	21.4	yes	yes	yes	yes		Weather: Pt/cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/3/17			0.5								*Low-flow groundwater sample:*
			1.0				Gauge only, per TRC				(A) peristaltic pump w/ ded tubing
			1.5						10/2/17		B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-56								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

*Located under yellow barricade; only the portion above hinge-line is above-grade.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-49
Event: Fall 2017 (Semiannual)
Area of Concern: TEL

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; short stickup) Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10/3/17	1235	NP	8.77	0.0	33.15	27.5	Y/S	Non-Standard	Issue	yes		Weather: PT/Cloudy 70°
6/4/17	1100	NP	5.38	0.0				Short stickup	↳ Broken Hinge			

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10/4/17	1105	9.02	0.5	6.91	25.6	3190	1.2	-345.3	2.5	Clear	*Low-flow groundwater sample:*
↓	1107	9.02	1.0	6.89	25.5	3210	1.1	-346.6	2.0	↓	(A) peristaltic pump w/ ded tubing
	1110	9.02	1.5	6.88	25.4	3200	1.1	-350.8	1.8		B) ded bladder pump
	1113	9.02	2.0	6.84	25.2	3200	0.9	-352.8	1.6		C) non-ded bladder pump; or
	1115	9.02	2.5	6.83	25.2	3200	0.8	-353.7	1.2		*Standard groundwater sample:*
	1117	9.02	3.0	6.83	25.1	3200	0.8	-355.2	1.1		D) bailer due to limited column; or
	1120	9.02	3.5	6.82	25.1	3200	0.7	-356.3	1.0		E) recovery well cycling sample
↓	1123	9.02	4.0	6.81	25.0	3200	0.7	-356.6	0.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1125	MW-49	9.02	6.81	25.0	3200	0.7	-356.6	0.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~				~~HNO_3~~	~~6010/6020~~
							Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)				HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

[Gravel lot area; relocated by surveyor, 1H15]

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[Covered by gravel; relocated ZH17]

Well: MW-106
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

(4-in; at-grade) Initials: TAB

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-4-17	1220	NP	6.97	0.0	22.50	17.5	yes	yes	yes	yes		Weather: PC/Cloudy 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-4-17	1225	7.01	0.5	7.80	27.2	2440	1.0	-354.6	7.7	Cleared/colorless	*Low-flow groundwater sample:*
	1227	7.02	1.0	6.77	26.9	3470	0.8	-359.9	6.6		(A) peristaltic pump w/ ded tubing
	1230	7.03	1.5	6.76	26.8	3480	0.8	-365.4	6.0		B) ded bladder pump
	1233	7.04	2.0	6.75	26.5	3500	0.8	-366.6	5.8		C) non-ded bladder pump; or
	1235	7.06	2.5	6.73	26.2	3510	0.9	-369.1	5.0		*Standard groundwater sample:*
	1237	7.08	3.0	6.73	26.2	3510	0.9	-369.8	4.8		D) bailer due to limited column; or
	1240	7.10	3.5	6.72	26.2	3510	0.8	-371.0	4.5		E) recovery well cycling sample
	1243	7.12	4.0	6.72	26.2	3510	0.8	-372.1	4.1		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10/4/17	1245	MW-106	7.12	6.72	26.2	3510	0.8	-372.1	4.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-45
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade) Initials: TAB

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10-3-17	1620	NP	4.63	0.0	15.05	12.3	yes	yes	yes	yes		Weather: PT/Cloudy 80°

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10-3-17	1625	4.83	0.5	7.22	24.2	4700	2.8	-207.9	6.8	Clear	*Low-flow groundwater sample:*
	1627	4.84	1.0	7.17	23.8	4770	2.3	-212.5	5.4		(A) peristaltic pump w/ ded tubing
	1630	4.84	1.5	7.15	23.7	4780	2.0	-213.6	3.2		B) ded bladder pump
	1633	4.84	2.0	7.11	23.6	4780	1.8	-216.0	2.9		C) non-ded bladder pump; or
	1635	4.84	2.5	7.08	23.6	4780	1.6	-217.1	2.6		*Standard groundwater sample:*
	1637	4.84	3.0	7.06	23.4	4790	1.5	-218.0	2.3		D) bailer due to limited column; or
	1640	4.84	3.5	7.05	23.4	4790	1.4	-219.1	2.2		E) recovery well cycling sample
	1643	4.84	4.0	7.06	23.4	4790	1.3	-219.6	1.9		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10-3-17	1645	MW-45	4.84	7.06	23.4	4790	1.3	-219.6	1.9	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~*Short List* Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO_3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* located within Artesia wool laydown yard, N. of the main warehouse.

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-50
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1000	NA	14.34	0.0	28.22	24.1	yes	yes	yes	yes		Weather: Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1005	14.35	0.5	7.30	23.0	6460	2.3	84.9	7.3	Colorless; Clear	*Low-flow groundwater sample:*
↓	1007	14.35	1.0	7.16	22.8	6650	1.7	88.2	6.7	↓	(A) peristaltic pump w/ ded tubing
	1010	14.35	1.5	7.07	22.7	6770	1.4	91.3	6.2		B) ded bladder pump
	1012	14.35	2.0	7.03	22.7	6900	1.3	93.7	5.8		C) non-ded bladder pump; or
	1015	14.35	2.5	7.01	22.6	6940	1.3	94.9	5.2		*Standard groundwater sample:*
	1017	14.35	3.0	6.99	22.5	6970	1.2	95.8	4.9		D) bailer due to limited column; or
	1020	14.35	3.5	6.97	22.4	6990	1.2	96.7	4.3		E) recovery well cycling sample
↓	1022	14.35	4.0	6.96	22.4	7010	1.2	97.4	4.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1025	MW-50	14.35	6.96	22.4	7010	1.2	97.4	4.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-97
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(4-in; at-grade) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1045	9.45	10.29	0.84	21.20	(NS)	yes	yes	yes	yes		Weather: Cloudy, 80's
		*		*		5' off base as needed						

Well Purging Record * Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not sampled to presence of						B) ded bladder pump
			2.0		≥ 0.03' LNAPL						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-97								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-92
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1055	11.26	11.31	0.05	22.60	17.6	yes	yes	yes	yes		Weather: Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not	Sampled	due to	presence of			B) ded bladder pump
			2.0	>	0.03'	LNAPL.					C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-92								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Bagged tubing

Inside doghouse

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge / Sample through 1-in guide-pipe

Well: RW-1 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1103	NA	10.18	0.0	35.39	30.4	yes	yes	yes	yes		Weather: Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-91
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1115	NA	10.54	0.0	25.35	17.9	yes	yes	yes	yes		Weather: Cloudy, 80's

Well Purging Record *pH Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	* pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1120	10.69	0.5	6.30	23.7	2700	2.2	-365.8	12.9	clear, black	*Low-flow groundwater sample:*
↓	1122	10.74	1.0	6.25	23.5	2580	2.0	-369.1	10.7	tint, odor	(A) peristaltic pump w/ ded tubing
	1125	10.77	1.5	6.28	23.3	2540	1.8	-369.9	10.3	↓	B) ded bladder pump
	1127	10.80	2.0	6.31	23.2	2520	1.7	-371.1	9.6		C) non-ded bladder pump; or
	1130	10.82	2.5	6.33	23.1	2500	1.6	-372.7	9.2		*Standard groundwater sample:*
	1132	10.83	3.0	6.35	23.1	2480	1.6	-374.0	8.7		D) bailer due to limited column; or
	1135	10.84	3.5	6.36	23.0	2470	1.5	-375.8	8.4		E) recovery well cycling sample
↓	1137	10.85	4.0	6.37	23.0	2460	1.5	-376.5	7.8	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1140	MW-91	10.85	6.37	23.0	2460	1.5	-376.5	7.8	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-90
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1155	NA	11.29	0.0	22.80	21.5	yes	yes	yes	yes		Weather: Partly Cloudy, 80's

Well Purging Record *SC confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	* SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1200	11.40	0.5	7.68	23.6	3320	1.9	-334.0	11.7	Clear; Colorless;	*Low-flow groundwater sample:*
	1202	11.43	1.0	7.26	23.2	3340	1.5	-339.1	10.1	Odor	(A) peristaltic pump w/ ded tubing
	1205	11.45	1.5	7.04	23.1	3360	1.4	-343.2	9.6		B) ded bladder pump
	1207	11.46	2.0	6.98	23.1	3370	1.3	-347.1	9.2		C) non-ded bladder pump; or
	1210	11.47	2.5	6.92	23.0	3380	1.3	-349.7	8.8		*Standard groundwater sample:*
	1212	11.47	3.0	6.89	22.9	3380	1.2	-351.6	8.6		D) bailer due to limited column; or
	1215	11.48	3.5	6.87	22.9	3380	1.2	-353.1	8.4		E) recovery well cycling sample
↓	1217	11.48	4.0	6.86	22.8	3390	1.1	-354.0	8.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1220	MW-90	11.48	6.86	22.8	3390	1.1	-354.0	8.1	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

*10.4.17: HMI Team was able to bend back the prot. casing to allow access to well.

Well: MW-96
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1235	NA	NM	NA	NA	21.2	yes	*Issue	*needs lock	yes		Weather: partly cloudy, 80's
10.4.17	825	NA	10.93	0.0	25.57	21.2						

10.3.17 It appears *well has been historically damaged and unable to lock due to broken hinge. the well has been struck, casing lid has completly broken off and the upper portion of the prot. casing is bent over the well cap making it unable to gauge/sample. *PVC well casing appears intact. See pictures

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	Comments
10.4.17	830	10.94	0.5	6.45	22.1	2150	2.3	-315.1	7.2	clear; colorless;	*Low-flow groundwater sample:*
|	832	10.94	1.0	6.64	22.0	2130	2.1	-331.2	6.8	white particles ↓	(A) peristaltic pump w/ ded tubing
|	835	10.94	1.5	6.66	21.9	2120	2.0	-343.2	6.1	odor	B) ded bladder pump
|	837	10.94	2.0	6.68	21.9	2120	1.9	-347.4	5.8	|	C) non-ded bladder pump; or
|	840	10.94	2.5	6.69	21.8	2120	1.9	-349.8	5.4	|	*Standard groundwater sample:*
|	842	10.94	3.0	6.70	21.8	2110	1.8	-351.6	5.2	|	D) bailer due to limited column; or
|	845	10.94	3.5	6.70	21.7	2110	1.8	-353.2	4.9	|	E) recovery well cycling sample
↓	847	10.94	4.0	6.71	21.8	2110	1.9	-354.9	4.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments: Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	850	MW-96	10.94	6.71	21.8	2110	1.9	-354.9	4.6	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tubing

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-94
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; Stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1245	11.73	11.80	0.07	23.45	16.0	yes	yes	yes	yes		Weather: Partly cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not	Sampled	due	to	presence		B) ded bladder pump
			2.0		of	≥ 0.03'	LNAPL.				C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		MW-94								DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Inside doghouse

Monitoring Well Purging and Sampling Record

(Gauge only)

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Gauge/Sample through 1-in PVC guide-pipe

Well: RW-8
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1253	10.70	10.74	0.04	37.22	35.2	yes	yes	yes	yes		Weather: Partly cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5		Not sampled due to presence						B) ded bladder pump
			2.0		of ≥ 0.03' LNAPL.						C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
		RW-8								DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
						~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,Ll)~~					~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-67
Event: Fall 2017 (Semiannual)
Area of Concern: Rest (4-in; at-grade)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1300	NA	9.06	0.0	27.30	19.9	yes	yes	yes	yes		Weather: Clear, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1305	9.20	0.5	7.55	25.0	2540	2.2	-327.9	8.9	clear; light	*Low-flow groundwater sample:*
↓	1307	9.23	1.0	7.38	24.4	2510	1.8	-342.6	8.1	yellow tint; odor;	(A) peristaltic pump w/ ded tubing
	1310	9.25	1.5	7.25	24.1	2490	1.7	-348.0	7.6	small black particles	B) ded bladder pump
	1312	9.26	2.0	7.12	24.0	2460	1.7	-351.6	7.2	↓	C) non-ded bladder pump; or
	1315	9.27	2.5	7.04	24.0	2450	1.6	-353.8	6.8		*Standard groundwater sample:*
	1317	9.28	3.0	7.01	23.9	2440	1.6	-354.6	6.4		D) bailer due to limited column; or
	1320	9.28	3.5	6.98	23.9	2430	1.5	-356.2	6.2		E) recovery well cycling sample
↓	1322	9.29	4.0	6.95	24.0	2430	1.5	-358.1	6.3	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1325	MW-67	9.29	6.95	24.0	2430	1.5	-358.1	6.3	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-95 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1340	NA	12.03	0.0	25.37	20.4	yes	yes	yes	yes		Weather: partly cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Bagged tubing. Inside "doghouse"

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

[Gauge/Sample through 1-in PVC guide-pipe]

Well: RW-7 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1349	NA*	*10.11	0.0	37.00	32.0	yes	yes	yes	yes		Weather: partly cloudy, 80's
			Confirmed									

Well Purging Record *Trace LNAPL on Interface probe

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL - 34A
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1745	NA	9.51	0.0	19.31	16.9	* Issue	yes	yes	yes		Weather: Cloudy, 70's
10.4.17	905	NA	9.54	0.0	19.31	16.9						

Well Purging Record

* Cannot fit cap and close prot. casing simultaneously, PVC needs to be lowered, or prot. casing raised. Left with no cap, well secure.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.4.17	910	9.68	0.5	7.20	22.9	1814	2.1	-313.4	7.4	Clear; colorless;	*Low-flow groundwater sample:*
↓	912	9.71	1.0	6.86	22.7	1864	1.9	-322.1	6.9	odor ; sheen	(A) peristaltic pump w/ ded tubing
	915	9.71	1.5	6.72	22.6	1878	1.8	-324.2	6.2	↓	B) ded bladder pump
	917	9.71	2.0	6.69	22.6	1890	1.7	-326.1	5.7		C) non-ded bladder pump; or
	920	9.71	2.5	6.68	22.5	1902	1.7	-326.8	5.3		*Standard groundwater sample:*
	922	9.71	3.0	6.67	22.4	1910	1.6	-327.4	5.0		D) bailer due to limited column; or
	925	9.71	3.5	6.66	22.5	1917	1.6	-327.9	4.9		E) recovery well cycling sample
↓	927	9.71	4.0	6.66	22.5	1923	1.6	-328.3	4.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	930	NCL-34A	9.71	6.66	22.5	1923	1.6	-328.3	4.6	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-33
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (Z-in; Stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1710	NA	8.01	0.0	19.60	17.7	yes	yes	yes	yes		Weather: Cloudy, 70's
10.4.17	945	NA	8.13	0.0	19.60	17.7						

Well Purging Record * pH Confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	* pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.4.17	950	8.23	0.5	7.39	22.4	2960	2.5	-198.1	11.4	clear; colorless	*Low-flow groundwater sample:*
	952	8.30	1.0	7.24	22.1	3000	2.1	-204.6	10.3		(A) peristaltic pump w/ ded tubing
	955	8.35	1.5	7.18	22.0	3010	2.0	-209.4	9.6		B) ded bladder pump
	957	8.38	2.0	7.14	21.9	3020	1.9	-212.6	9.2		C) non-ded bladder pump; or
	1000	8.41	2.5	7.12	21.9	3030	1.9	-214.7	8.7		*Standard groundwater sample:*
	1002	8.44	3.0	7.08	21.8	3050	1.8	-216.8	8.1		D) bailer due to limited column; or
	1005	8.47	3.5	7.06	21.8	3060	1.7	-218.9	7.8		E) recovery well cycling sample
	1007	8.49	4.0	7.04	21.9	3070	1.7	-219.7	7.3		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	1010	NCL-33	8.49	7.04	21.9	3070	1.7	-219.7	7.3	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-44
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1630	NA	7.97	0.0	21.57	17.4	*Issue	yes	yes	yes		Weather: Partly Cloudy, 80's

Well Purging Record

*Cannot fit cap and close prot. casing simultaneously. Left with no cap, well secured.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1635	8.01	0.5	7.02	25.1	2570	2.1	-172.1	11.4	Clear; light	*Low-flow groundwater sample:*
↓	1637	8.01	1.0	6.92	23.5	2590	1.6	-202.3	8.6	yellow tint	(A) peristaltic pump w/ ded tubing
	1640	8.01	1.5	6.91	23.2	2590	1.4	-212.4	8.1	↓	B) ded bladder pump
	1642	8.01	2.0	6.90	23.1	2600	1.3	-218.7	6.7		C) non-ded bladder pump; or
	1645	8.01	2.5	6.89	23.0	2610	1.2	-224.6	5.6		*Standard groundwater sample:*
	1647	8.01	3.0	6.88	23.0	2620	1.1	-229.7	5.2		D) bailer due to limited column; or
	1650	8.01	3.5	6.87	22.9	2620	1.1	-234.1	4.8		E) recovery well cycling sample
↓	1652	8.01	4.0	6.87	22.9	2620	1.1	-237.6	4.4	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1655	NCL-44	8.01	6.87	22.9	2620	1.1	-237.6	4.4	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

+ EB-NCL-01 (for same analysis)

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-32
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

(2-in; at-grade)

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1540	NA	8.39	0.0	20.06	18.1	yes	yes	yes	yes		Weather: Partly Cloudy, 80's

Well Purging Record

*DO confirmed

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	*Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1545	8.50	0.5	7.45	24.4	2480	2.4	-118.1	29.6	Clear; colorless;	*Low-flow groundwater sample:*
	1547	8.51	1.0	7.30	23.3	2500	1.6	-122.1	22.4	Small white particles	(A) peristaltic pump w/ ded tubing
	1550	8.51	1.5	7.23	22.9	2510	1.3	-124.2	18.9		B) ded bladder pump
	1552	8.51	2.0	7.19	22.7	2510	1.1	-126.4	17.1		C) non-ded bladder pump; or
	1555	8.51	2.5	7.15	22.5	2510	1.0	-128.1	15.6		*Standard groundwater sample:*
	1557	8.51	3.0	7.12	22.4	2520	0.9	-129.6	13.9		D) bailer due to limited column; or
	1600	8.51	3.5	7.10	22.5	2520	0.8	-130.9	13.6		E) recovery well cycling sample
	1602	8.51	4.0	7.08	22.6	2520	0.8	-131.7	13.0		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1605	NCL-32	8.51	7.08	22.6	2520	0.8	-131.7	13.0	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
								Anions (Chloride,Fluoride,Sulfate)			Neat	300
							Cations (Ca,K,Na), taken from total metals bottle				HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
							Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)				HNO_3	6010/6020
							~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~				HNO_3	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
	1620	EB-NCL-01	NA							Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* Access by Foot

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-108
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (4-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1405	NA	10.78	0.0	27.74	22.5	yes	yes	yes	yes		Weather: partly cloudy, 80s

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1410	10.92	0.5	7.51	24.3	2790	1.8	-331.6	15.6	Clear; yellow tint;	Low-flow groundwater sample:
	1412	10.99	1.0	7.40	24.1	2810	1.6	-338.9	13.1	odor	(A) peristaltic pump w/ ded tubing
	1415	11.03	1.5	7.22	23.9	2690	1.7	-346.4	11.7		B) ded bladder pump
	1417	11.06	2.0	7.13	23.8	2670	1.7	-350.1	10.4		C) non-ded bladder pump; or
	1420	11.09	2.5	7.09	23.7	2650	1.6	-354.2	9.8		Standard groundwater sample:
	1422	11.11	3.0	7.06	23.6	2640	1.6	-357.7	9.3		D) bailer due to limited column; or
	1425	11.13	3.5	7.04	23.5	2630	1.5	-359.8	8.8		E) recovery well cycling sample
	1427	11.15	4.0	7.02	23.5	2620	1.5	-362.1	8.5		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1430	MW-108	11.15	7.02	23.5	2620	1.5	-362.1	8.5	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

* SW of NCL field

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: NCL-31
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1450	NA	8.11	0.0	20.16	17.4	Issue	yes	yes	yes		Weather: Partly Cloudy, 80s

Well Purging Record

* Cannot fit cap and close prot. Casing simultaneously. Left with no cap, well secure.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	1455	8.32	0.5	7.78	26.1	2940	2.0	-225.1	7.2	Clear; Colorless	*Low-flow groundwater sample:*
	1457	8.35	1.0	7.62	25.8	2920	1.7	-228.9	6.3	Small white	(A) peristaltic pump w/ ded tubing
	1500	8.35	1.5	7.55	25.6	2890	1.4	-226.1	6.1	Particles	B) ded bladder pump
	1502	8.35	2.0	7.47	25.5	2880	1.2	-224.0	5.8		C) non-ded bladder pump; or
	1505	8.35	2.5	7.40	25.4	2870	1.1	-222.6	5.3		*Standard groundwater sample:*
	1507	8.35	3.0	7.37	25.3	2860	1.0	-220.2	4.9		D) bailer due to limited column; or
	1510	8.35	3.5	7.34	25.2	2850	0.9	-219.1	4.4		E) recovery well cycling sample
↓	1512	8.35	4.0	7.31	25.2	2850	0.9	-218.0	4.2	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	1515	NCL-31	8.35	7.31	25.2	2850	0.9	-218.0	4.2	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Not in "Sampling" program

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-19 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1530	NA	8.38	0.0	22.08	Not Sampled	yes	*Issue	*Issue	yes		Weather: Partly Cloudy, 80's

*NO prot. casing, just exposed PVC casing, well cannot be secured.

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H2SO4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-55
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1727	NA	10.23	0.0	26.58	21.7	yes	yes	yes	yes		Weather: cloudy, 70's
10.4.17	1025	NA	10.23	0.0	26.58	21.7	yes	yes	yes	yes		

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.4.17	1030	10.25	0.5	7.21	22.1	3550	3.0	-282.4	12.7	clear; colorless	*Low-flow groundwater sample:*
	1032	10.25	1.0	7.17	21.7	3670	2.2	-274.1	10.0		(A) peristaltic pump w/ ded tubing
	1035	10.25	1.5	7.15	21.6	3700	1.9	-258.6	9.2		B) ded bladder pump
	1037	10.25	2.0	7.14	21.5	3720	1.8	-250.3	9.0		C) non-ded bladder pump; or
	1040	10.25	2.5	7.13	21.4	3730	1.7	-245.7	8.6		*Standard groundwater sample:*
	1042	10.25	3.0	7.12	21.4	3740	1.7	-241.8	8.3		D) bailer due to limited column; or
	1045	10.25	3.5	7.11	21.3	3740	1.8	-237.3	7.9		E) recovery well cycling sample
	1047	10.25	4.0	7.11	21.3	3750	1.8	-235.2	7.4		F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
10.4.17	1050	MW-55	10.25	7.11	21.3	3750	1.8	-235.2	7.4	DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										~~***Short List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)~~	~~HNO3~~	~~6010/6020~~
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: RW-#17A (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: Rest

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (6-in PVC stickup w/ "belled" top) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1735	NA	10.06	0.0	16.02	14.0	yes	Issue	Issue*	yes		Weather: Partly Cloudy, 80's
					(soft)							

Well Purging Record

*No Prot. Casing, just exposed PVC, well is unable to be secured.

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-18 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: NCL (4-in; stickup)

Hydrologic Monitoring
for TRC
Houston, Texas

Initials: CJH

Well Inspection Information

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	1718	NA	10.13	0.0	22.20	20.2	yes	yes	yes	yes		Weather: Partly Cloudy, 80's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-54A
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	825	NA	10.83	0.0	31.30	23.6	yes	yes	yes	yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	830	10.86	0.5	6.31	21.8	2260	3.1	53.0	8.1	Colorless, Clear	*Low-flow groundwater sample:*
	832	10.86	1.0	6.37	22.5	2240	2.1	61.4	7.6		(A) peristaltic pump w/ ded tubing
	835	10.86	1.5	6.42	22.0	2220	1.8	66.4	7.0		B) ded bladder pump
	837	10.86	2.0	6.45	21.9	2210	1.6	71.4	6.8		C) non-ded bladder pump; or
	840	10.86	2.5	6.47	21.8	2200	1.5	72.6	6.2		*Standard groundwater sample:*
	842	10.86	3.0	6.49	21.7	2190	1.5	74.1	5.9		D) bailer due to limited column; or
	845	10.86	3.5	6.50	21.7	2190	1.4	75.7	5.4		E) recovery well cycling sample
↓	847	10.86	4.0	6.51	21.6	2180	1.4	76.3	5.1	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	850	MW-54A	10.86	6.51	21.6	2180	1.4	76.3	5.1	DRO	HCL	8015M
										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-54B (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information

(2-in; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	902	NA	10.93	0.0	46.80	41.8	yes	yes	yes	yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500
										If <0.03 feet LNAPL present, remove LNAPL and sample groundwater		

Added 10.3.17
✓ + Trip Blank - NCL-01

+ Dup - NCL - 01 (for same analysis)

Monitoring Well Purging and Sampling Record

Navajo Refinery Company
Artesia Refinery
Artesia, New Mexico

Well: NCL - 49
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in ; stickup) Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	910	NA	15.08	0.0	32.18	27.2	yes	yes	yes	yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
10.3.17	915	15.11	0.5	7.06	22.5	3120	2.2	64.7	9.6	Colorless; clear	*Low-flow groundwater sample:*
↓	917	15.11	1.0	7.02	22.1	3000	1.8	71.0	8.5	↓	(A) peristaltic pump w/ ded tubing
	920	15.11	1.5	7.00	21.9	2990	1.7	74.4	8.2		B) ded bladder pump
	922	15.11	2.0	6.98	21.8	3010	1.7	76.6	7.4		C) non-ded bladder pump; or
	925	15.11	2.5	6.97	21.7	3030	1.7	78.2	6.9		*Standard groundwater sample:*
	927	15.11	3.0	6.97	21.6	3050	1.6	79.7	5.7		D) bailer due to limited column; or
	930	15.11	3.5	6.96	21.6	3060	1.6	80.1	5.0		E) recovery well cycling sample
↓	932	15.11	4.0	6.96	21.5	3070	1.5	80.9	4.6	↓	F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments
												Lab: ESC Lab Sciences, Mt. Juliet, TN
10.3.17	935	NCL-49	15.11	6.96	21.5	3070	1.5	80.9	4.6	DRO	HCL	8015M
↓										~~GRO~~	~~HCL~~	~~8015M~~
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										~~***Long List*** Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)~~	~~HNO_3~~	~~6010/6020 and/or 7470~~
										~~Cyanide~~	~~NaOH~~	~~SM4500~~
↓	900	Dup-NCL-01	15.11	6.96	21.5	3070	1.5	80.9	4.6	Same as above	Same	Same
												If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

* ~15' at 70 mile marker 285 northbound

Monitoring Well Purging and Sampling Record

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Well: MW-53 (Gauge only)
Event: Fall 2017 (Semiannual)
Area of Concern: NCL

Hydrologic Monitoring
for TRC
Houston, Texas

Well Inspection Information (2-in; at-grade)

Initials: CJH

Date	Time	Depth to LNAPL (Ft-TOC)	Depth to Water (Ft-TOC)	LNAPL Thickness (Ft)	Well Total Depth (Ft-TOC)	Sample Intake (Ft-TOC)	Well Inspection					Comments
							Cap	Casing	Well Secured	Label	Other	
10.3.17	815	NA	9.25	0.0	23.60	19.6	yes	yes	yes	yes		Weather: Cloudy, 70's

Well Purging Record

Date	Time	Depth to Water (Ft-TOC)	Cum. Vol. Purged (L)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Water Color / Clarity	
			0.5								*Low-flow groundwater sample:*
			1.0								(A) peristaltic pump w/ ded tubing
			1.5								B) ded bladder pump
			2.0								C) non-ded bladder pump; or
			2.5								*Standard groundwater sample:*
			3.0								D) bailer due to limited column; or
			3.5								E) recovery well cycling sample
			4.0								F) irrigation well grab sample

Well Sampling Record

Date	Time	Sample I.D.	Depth to Water (Ft-TOC)	pH (std units)	T (C)	SC (umho/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction-Potential (mV)	Turbidity (NTU)	Parameter	Preserv	Comments Lab: ESC Lab Sciences, Mt. Juliet, TN
										DRO	HCL	8015M
										GRO	HCL	8015M
										VOC	HCL	8260
										Anions (Chloride,Fluoride,Sulfate)	Neat	300
										Cations (Ca,K,Na), taken from total metals bottle	HNO_3	6010/6020
										Nitrate-Nitrite	H_2SO_4	per historical, ESC Lab Sciences
										TDS	Neat	2540C
										Short List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se)	HNO_3	6010/6020
										Long List Total Metals (As,Ba,Cr,Fe,Pb,Mn,Se,Hg,Ni,V,B,Cd,Co,U)	HNO_3	6010/6020 and/or 7470
										Cyanide	NaOH	SM4500

If <0.03 feet LNAPL present, remove LNAPL and sample groundwater

Instrument Calibration Log

Navajo Refining Company
Artesia Refinery
Artesia, New Mexico

Hydrologic Monitoring
for TRC
Houston, Texas

Date	Time	pH Hanna (Std. units)	Specific Conductivity Hanna (umho/cm)	Dissolved Oxygen Hanna (Slope Cal. in saturated air)	Turbidity Lamotte (NTU)	ORP Hanna HI 7020 Soln (200-275 mV)	PID Thermo Environmental 100 ppm Isobutylene	Initials / Comments
10/3/17	0600	4.01/7.00	1,000	100%	10.0	241.7	NA	SCH
10.3.17	0615	4.01/7.00	1,000	100%	10.0	237.4	NA	CJH
10.3-17	0618	4.01/7.00	1,000	100%	10.0	242.6	NA	RLR
10/3/17	0622	4.01/7.00	1,000	100%	10.0	237.1	NA	GDS
10/3/17	0625	4.01/7.00	1,000	100%	10.0	242.5	NA	SCD
10/3/17	0628	4.01/7.00	1,000	100%	10.0	256.8	NA	BR
10/3/17	0630	4.01/7.00	1,000	100%	10.0	257.0	NA	TAB
10-3-17	0635	4.01/7.00	1,000	100%	10.0	239.1	NA	BRH
10/4/17	0638	4.01/7.00	1,000	100%	10.0	244.9	NA	GDS
10/4/17	0641	4.01/7.00	1,000	100%	10.0	250.3	NA	BR
10.4.17	0644	4.01/7.00	1,000	100%	10.0	242.7	NA	CJH
10-4-17	0648	4.01/7.00	1,000	100%	10.0	237.1	NA	BRH
10-4-17	0650	4.01/7.00	1,000	100%	10.0	241.3	NA	RLR
10-4-17	0651	4.01/7.00	1,000	100%	10.0	251.8	NA	TAB
10-4-17	0700	4.01/7.00	1,000	100%	10.0	245.6	NA	SCD

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Spear

Email To: jspear@trcsolutions.com

Project Description: REST Fall 2017

City/State Collected: Artesia, NM

Phone: 512-684-3170

Client Project #

Lab Project #: TRCATX-REST

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ... 200%
___ Next Day ... 100%
___ Two Day ... 50%
___ Three Day ... 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions TDS	NO2NO3	Cyanide
Trip Blank - Rest - 03	Grab	GW		10/3/17	---		✓								
Dup - Rest - 02	Grab	GW		10/3/17	1040		✓	✓	✓	✓		✓	✓	✓	
EB - Rest - 02	Grab	GW		10/3/17	940		✓	✓	✓	✓		✓	✓	✓	
MW - 104	Grab	GW		10/3/17	930		✓	✓	✓	✓		✓	✓	✓	
MW - 64	Grab	GW		10/3/17	1030		✓	✓	✓	✓		✓	✓	✓	
MW - 65	Grab	GW		10/3/17	1110		✓	✓	✓	✓		✓	✓	✓	
MW - 102	Grab	GW		10/3/17	1200		✓	✓	✓	✓		✓	✓	✓	
MW - 99	Grab	GW		10/3/17	1300		✓	✓	✓	✓		✓	✓	✓	
MW - 66	Grab	GW		10/3/17	1340		✓	✓	✓		✓	✓	✓	✓	✓
MW - 28	Grab	GW		10/3/17	1420		✓	✓	✓		✓	✓	✓	✓	✓

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - DrinkingWater OT - Other

Remarks:

Relinquished by: (Signature) — Date: 10/4/17 — Time: 1430 — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received for lab by: (Signature)

Analysis / Container / Preservative

Chain of Custody — Page 1 of 1

ESC LAB SCIENCES

Account: TRCATX
Project:
Template:
PM: Chris McCord
Profile:
Project No:

Pres. Correct/Check — Sample # Only

pH — Temp
Flow — Other
Correct container(s) — Yes — No
Sufficient volume — Yes — No
Samples received via: Fedex ☐ Courier ☐ ___
VOC Free — Yes — No — NA
Preservation Correct/Checked — Yes — No — NA
RAD Screen <0.5 mR/hr — Yes — No

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: REST Fall 2017

City/State Collected: Artesia, NM

Phone: 512-884-3170
Fax:

Client Project #

Lab Project #: TRCATX - REST

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: REST (Navajo - Artesia)

P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✔

Rush? (Lab MUST be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✔Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total Only)	Long List Metals (Total Only)	Cations (Diss. Total metals * bottle)	Anions TDS	NO2NO3	Cyanide
MW-128	Grab	GW		10/3/17	1520		✓	✓	✓	✓		✓	✓	✓	
Dup-Rest-04	Grab	GW		10/3/17	1200		✓	✓	✓		✓	✓	✓	✓	✓
EB-Rest-04	Grab	GW		10/3/17	1550		✓	✓	✓		✓	✓	✓	✓	✓
MW-60	Grab	GW		10/3/17	1545		✓	✓	✓		✓	✓	✓	✓	✓
MW-125	Grab	GW		10/3/17	1645		✓	✓	✓	✓		✓	✓	✓	
MW-116	Grab	GW		10/3/17	1730		✓	✓	✓	✓		✓	✓	✓	
MW-127	Grab	GW		10/3/17	1795		✓	✓	✓	✓		✓	✓	✓	
MW-126B	Grab	GW		10/3/17	1705		✓	✓	✓	✓		✓	✓	✓	
MW-126A	Grab	GW		10/3/17	1625		✓	✓	✓	✓		✓	✓	✓	
KWB-12B	Grab	GW		10/3/17	1520		✓	✓	✓		✓	✓	✓	✓	✓

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

Remarks:

Analysis / Container / Preservative

Chain of Custody Page 2 of 17

ESC LAB SCIENCES

Lab Reference: Mount Juliet, TN 37122 Phone: 800-767-5859 Fax: 615-758-5859

Lab

Table #

Acctnum: TRCATX

Template:

Prelogin:

TSR: Chris McCord

Cooler:

Shipped Via:

Sample Receipt Checklist | Temperature Blank Received

Relinquished by: (Signature) Scott Ude
Date: 10/4/17 Time: 1430
Received by: (Signature)

Relinquished by: (Signature)
Date: Time:
Received by: (Signature)

Relinquished by: (Signature)
Date: Time:
Received for lab by: (Signature)

Sample Received via: Client ✔FedEx Courier
Temp: °C Bottles Received:
Date: Time:

COC Seal Present: Y N NA
COC Signed/Accurate:
Bottles Arrive Intact:
Correct Bottles:
Sufficient Volume:
RAD Screen <0.5 mR/hr:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TRCATX-REST

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice: N ___ Y ✓

Rush? (Lab MUST be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 3 of 17

ESC LAB SCIENCES

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	WQC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions: TDS	NO2NO3	Cyanide
Dup-Rest-05	Grab	GW		10/3/17	1200		✓	✓	✓		✓	✓	✓	✓	✓
EB-Rest-05	Grab	GW		10/3/17	1515		✓	✓	✓		✓	✓	✓	✓	✓
KWB-12A	Grab	GW		10/3/17	1415		✓	✓	✓		✓	✓	✓	✓	✓
Trip Blank-Rest-02	Grab	GW		10/3/17	—		✓								
MW-57	Grab	GW		10/3/17	1335		✓	✓	✓	✓		✓	✓	✓	
KWB-1A	Grab	GW		10/3/17	1230		✓	✓			✓	✓	✓	✓	✓
KWB-10R	Grab	GW		10/3/17	1145		✓	✓		✓		✓	✓	✓	
MW-36	Grab	GW		10/3/17	1055		✓	✓	✓		✓	✓	✓	✓	✓
RA-4798	Grab	GW		10/3/17	1700		✓					✓	✓	✓	
KWB-8	Grab	GW		10/3/17	1040		✓	✓			✓	✓	✓	✓	✓

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other: _____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature) Scott Ude — Date: 10/4/17 — Time: 1430 — Received by: (Signature)
Relinquished by: (Signature) — Date: — Time: — Received by: (Signature)
Relinquished by: (Signature) — Date: — Time: — Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ Fedex ☐ Courier ☐ _____
Tracking #
Temp: °C Bottles Received:
Date: Time:

Condition: (lab use only)
COC Seal Intact: Y N NA
Pres Correct: Y N NA

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TRCATX - REST

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice: N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABORATORIES

Lab profile/line:
Table #:
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Analytes (Total Only)	Long List Metals (Total Only)	Cations (Total metals + Boron)	Anions, TDS	NO2/NO3	Cl2/Residue
MW-135	Grab	GW		10/3/17	1550		✓	✓	✓	✓		✓	✓	✓	
KWB-11A	Grab	GW		10/3/17	1455		✓	✓	✓		✓	✓	✓	✓	✓
KWB-11B	Grab	GW		10/3/17	1415		✓	✓	✓		✓	✓	✓	✓	✓
KWB-7	Grab	GW		10/3/17	1330		✓	✓			✓	✓	✓	✓	✓
MW-98	Grab	GW		10/3/17	1225		✓	✓	✓	✓		✓	✓	✓	
MW-101	Grab	GW		10/3/17	1735		✓	✓	✓	✓		✓	✓	✓	
Trip Blank - Rest - 04	Grab	GW		10/3/17	----		✓								
MW-29	Grab	GW		10/3/17	1555		✓	✓	✓	✓		✓	✓	✓	
MW-50	Grab	GW		10/3/17	1025		✓	✓		✓		✓	✓	✓	
MW-91	Grab	GW		10/3/17	1140		✓	✓	✓	✓		✓	✓	✓	

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ✓Fed Ex ☐ Courier
Scott Ude	10/4/17	1430		Tracking #
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:

Condition: (lab use only)
COC Seal Present: Y N NA
COC Signed/Accurate:
Bottles arrive intact:
SCR#:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: speer@trcwsolutions.com
Project Description: REST Fall 2017
City/State Collected: Artesia, NM
Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TRCATX - REST
Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027
Collected by (signature):
Immediately Packed on Ice N ___ Y ✓
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 5 of 17

ESC LABORATORY SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO2NO3	Cyanide	Rem./Contaminant	Sample # (lab only)
MW-90	Grab	GW		10/3/17	1220		✓	✓	✓	✓		✓	✓	✓			
MW-67	Grab	GW		10/3/17	1325		✓	✓	✓		✓	✓	✓	✓	✓		
MW-137	Grab	GW		10/4/17	1155		✓	✓	✓		✓	✓	✓	✓	✓		
MW-138	Grab	GW		10/4/17	1110		✓	✓	✓		✓	✓	✓	✓	✓		
MW-23	Grab	GW		10/4/17	1025		✓	✓	✓	✓		✓	✓	✓			
MW-43	Grab	GW		10/4/17	940		✓	✓	✓		✓	✓	✓	✓	✓		
MW-39	Grab	GW		10/4/17	855		✓	✓	✓	✓		✓	✓	✓			
KWB-2R	Grab	GW		10/4/17	1110		✓	✓		✓		✓	✓	✓			
KWB-5	Grab	GW		10/4/17	1140		✓	✓		✓		✓	✓	✓			
KWB-6	Grab	GW		10/4/17	1150		✓	✓		✓		✓	✓	✓			

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

pH ___ Temp ___
Flow ___ Other ___

Remarks:

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/4/17	1430	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ___
Temp: °C Bottles Received:
Date: Time:

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwastesolutions.com

Project Description: REST Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TRCATX - REST

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice: N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (Total metals* bottle)	Anions, TDS	NO2/NO3	Cyanide
MW-52	Grab	GW		10/4/17	915		✓	✓	✓		✓	✓	✓	✓	✓
mw-53	Grab	GW		10/4/17	1030		✓	✓			✓	✓	✓	✓	✓
MW-109	Grab	GW		10/4/17	900		✓	✓	✓	✓		✓	✓	✓	
MW-110	Grab	GW		10/4/17	945		✓	✓	✓	✓		✓	✓	✓	
MW-111	Grab	GW		10/4/17	1055		✓	✓	✓	✓		✓	✓	✓	
MW-117	Grab	GW		10/4/17	835		✓	✓	✓	✓		✓	✓	✓	
MW-118	Grab	GW		10/4/17	920		✓	✓	✓	✓		✓	✓	✓	
MW-119	Grab	GW		10/4/17	1005		✓	✓	✓	✓		✓	✓	✓	
MW-131	Grab	GW		10/4/17	1135		✓	✓	✓	✓		✓	✓	✓	
MW-106	Grab	GW		10/4/17	1245		✓	✓	✓	✓		✓	✓	✓	

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LAB SCIENCES

Charge Code: TRCATX
Report to: Chris McCord
Quote #:
PO #:
Shipped Via:

Relinquished by: (Signature) Scott Ude — Date: 10/4/17 — Time: 1430 — Received by: (Signature)
Relinquished by: (Signature) — Date: — Time: — Received by: (Signature)
Relinquished by: (Signature) — Date: — Time: — Received for lab by: (Signature)

Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐
Temp: °C Bottles Received:
Condition: (lab use only)
COC Seal Intact: Y N N/A
pH Checked: pH:

pH ____ Temp ____
Flow ____ Other ____

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: REST Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TPCATX-REST

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: REST (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
Fax? ___No ___Yes
No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (Ca,Mg,Na,K "total metals" Bottle)	Anions, TDS	NO2/NO3	Cyanide
MW-62	Grab	GW		10/14/17	1025		✓	✓	✓	✓		✓	✓	✓	
MW-61	Grab	GW		10/4/17	925		✓	✓	✓	✓		✓	✓	✓	
MW-105	Grab	GW		10/4/17	825		✓	✓	✓	✓		✓	✓	✓	
MW-130	Grab	GW		10/4/17	1245		✓	✓	✓	✓		✓	✓	✓	
MW-48	Grab	GW		10/4/17	1225		✓	✓	✓	✓		✓	✓	✓	
MW-96	Grab	GW		10/4/17	850		✓	✓	✓	✓		✓	✓	✓	
MW-113	Grab	GW		10/4/17	1140		✓	✓	✓	✓		✓	✓	✓	
Dup-Rest-01	Grab	GW		10/4/17	1100		✓	✓	✓	✓		✓	✓	✓	
EB-Rest-01	Grab	GW		10/4/17	1210		✓	✓	✓	✓		✓	✓	✓	
Trip Blank-Rest-01	Grab	GW		10/4/17	—		✓								

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/14/17	1430	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

pH ___ Temp ___
Flow ___ Other ___
Sample(s) received via: ☐ UPS ✓ FedEx ☐ Courier ☐ ___
COC Seal Present: ___ Y ___ N ___ NA
COC Signed/Accurate: ___ Y ___ N
Bottles arrive intact: ___ Y ___ N
Correct bottles used: ___ Y ___ N
Sufficient volume sent: ___ Y ___ N
If Applicable: VOA Zero Headspace: ___ Y ___ N
Preservation Correct/Checked: ___ Y ___ N
RAD Screen <0.5 mR/hr: ___ Y ___ N

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABORATORIES

Lab MUST be notified
Phone: 800-767-5859
Fax: 615-758-5859

Acctnum: TRCATX
Template:
Prelogin:
PM: Chris McCord
Shipped Via:
Remarks / Sample Specific Notes
Sample # (lab only)

Company Name/Address:

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcsolutions.com
Project Description: REST Fall 2017	City/State Collected: Artesia, NM
Phone: 512-684-3170 Fax:	Client Project #	Lab Project # TRCATX - REST
Collected by (print): Scott Ude/HMI Team	Site/Facility ID #: REST (Navajo - Artesia)	P.O. #: 107027
Collected by (signature): Immediately Packed on Ice: N ___ Y ✓	Rush? (Lab MUST Be Notified) ___ Same Day 200% ___ Next Day 100% ___ Two Day 50% ___ Three Day 25%	Date Results Needed Email? ___No ✓Yes Fax? ___No ___Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	VOC	DRO	DRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions 1D3	NO2NO3	Gyration
Dup-Rest-03	Grab	GW		10/4/17	1200		✓	✓	✓	✓		✓	✓	✓	
EB-Rest-03	Grab	GW		10/4/17	1120		✓	✓	✓	✓		✓	✓	✓	
mw-134	Grab	GW		10/4/17	1110		✓	✓	✓	✓		✓	✓	✓	
RA-4196	Grab	GW		10/4/17	1145		✓					✓	✓	✓	
mw-115	Grab	GW		10/4/17	915		✓	✓	✓	✓		✓	✓	✓	
mw-114	Grab	GW		10/4/17	1010		✓	✓	✓	✓		✓	✓	✓	
	Grab	GW													
	Grab	GW													
	Grab	GW													
	Grab	GW													

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other ___

Remarks:

Relinquished by: (Signature)	Date: 10/4/17	Time: 1430	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Sample Receipt Checklist: Custody Seals Present/Intact: ✓Yes ☐No ☐N/A; Custody Signatures Present: ✓Yes ☐No ☐N/A; Bottles Intact: ✓Yes ☐No ☐N/A; Correct Bottles Used: ✓Yes ☐No ☐N/A; Sufficient Volume Sent: ✓Yes ☐No ☐N/A; If Applicable: VOA Zero Headspace: ✓Yes ☐No ☐N/A; Preservation Correct/Checked: ✓Yes ☐No ☐N/A; RAD Screen <0.5 mR/hr: ✓Yes ☐No ☐N/A

Analysis / Container / Preservative

Chain of Custody Page 2 of 17

ESC LAB SCIENCES

Account: TRCATX
Project:
Profile/Template:
PO:
Quote:
Email To: Chris McCord
Phone:
Fax:
Data Package Options (circle if required)

Cooler Receipt Form
Variance #:
Temp: Other: Thermometer ID:
Cooler Custody Seals: Y or N
Received on Ice: Y or N
Sample Containers Intact: Y or N
Sample Labels match COC: Y or N
-Includes date/time/ID/Analysis Matrix:
Trip Blank Present: Y or N
Trip Blank Custody Seals: Y or N
Samples Received within Holding Time: Y or N
VOA Zero Headspace: Y or N
Pres. Correct/Checked: Y or N

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: TMD Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #:
Lab Project #: TRCATX - TMD

Collected by (print): Scott Lide/HMI Team
Site/Facility ID #: TMD (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✔

Rush? (Lab MUST be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed:
Email? ___No ✔Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (Ca,Mg,Na,K) (Total metals" bottle)	Anions: TDS	NO2/NO3	Cyanide		
MW-46R	Grab	GW		10/3/17	1810		✓	✓		✓		✓	✓	✓			
MW-21	Grab	GW		10/4/17	1245		✓	✓	✓	✓		✓	✓	✓			
Trip Blank-TMD-01	Grab	GW		10/4/17	—		✓										
NP-1	Grab	GW		10/4/17	1245		✓										
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															
	Grab	GW															

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other:

Remarks:

pH: ___ Temp: ___
Flow: ___ Other: ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Lide	10/4/17	1430	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ✔ FedEx ☐ Courier ☐ ___
Temp: ___ °C Bottles Received:
Date: ___ Time: ___

Chain of Custody Page 2 of 2

ESC LAB SCIENCES

Client Information
Project Information
TSR: Chris McCord
Profile #:
Acctnum: TRCATX
Template:
Prelogin:
Shipped Via:

Remarks/Contaminant	Sample # (lab only)

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: TEL Fall 2017
City/State Collected: Artesia, NM

Phone: 512-694-3170
Fax:
Client Project #
Lab Project # TRCATX - TEL

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: TEL (Navajo - Artesia)
P.O. # 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Arsenic (Total only)	Long List Metals (Total only)	Cations (Total, Total Inorganic Profile)	Anions TDS	NO2NO3	Cyanide	
TEL-1	Grab	GW		10/3/17	1125		✓	✓	✓	✓		✓	✓	✓		
Trip Blank - TEL-01	Grab	GW		10/3/17	—		✓									
TEL-2	Grab	GW		10/3/17	1035		✓	✓	✓	✓		✓	✓	✓		
EB-TEL-01	Grab	GW		10/3/17	950		✓	✓	✓	✓		✓	✓	✓		
TEL-4	Grab	GW		10/3/17	925		✓	✓	✓	✓		✓	✓	✓		
Dup-TEL-01	Grab	GW		10/3/17	1000		✓	✓	✓	✓		✓	✓	✓		
MW-49	Grab	GW		10/4/17	1125		✓	✓	✓		✓	✓	✓	✓	✓	
	Grab	GW														
	Grab	GW														
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Scott Ude	10/4/17	1430	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for lab by: (Signature)

Analysis / Container / Preservative

Chain of Custody Page 10 of 17

ESC LAB SCIENCES

Lab MUST be notified of any pH Checked pH Adjusted

Sample Receipt Checklist
Temp: °C
Received on Ice: Y N
Custody Seals Present: Y N
Custody Seals Intact: Y N
Samples Received via: Fed Ex ✓ Courier Client
Sample Condition: Acceptable
Cooler Temp Acceptable
Correct Containers Used
Sufficient Volume Sent
Field Data Required
Hold Time Acceptable
Received within Hold Time
Trip Blank Received
Preservation Correct / Checked
VOA Zero Headspace
Project Manager Review
Date: Time:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: speer@trcwsolutions.com

Project Description: EP Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:
Client Project #
Lab Project #: TRCATX-EP

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: EP (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions TDS	NO2NO3	Cyanide	Rem./Contaminant	Sample # (lab only)
Trip Blank - EP-01	Grab	GW		10/3/17	—		✓										
MW-2A	Grab	GW		10/3/17	1340		✓	✓	✓	✓		✓	✓	✓			
MW-122	Grab	GW		10/3/17	1230		✓	✓	✓	✓		✓	✓	✓			
MW-121	Grab	GW		10/3/17	1135		✓	✓	✓	✓		✓	✓	✓			
MW-120	Grab	GW		10/3/17	1055		✓	✓	✓	✓		✓	✓	✓			
MW-84	Grab	GW		10/3/17	1015		✓	✓	✓	✓		✓	✓	✓			
MW-75	Grab	GW		10/3/17	1745		✓	✓	✓	✓		✓	✓	✓			
MW-76	Grab	GW		10/3/17	1645		✓	✓	✓	✓		✓	✓	✓			
MW-83	Grab	GW		10/3/17	1600		✓	✓	✓	✓		✓	✓	✓			
MW-3	Grab	GW		10/3/17	1515		✓	✓	✓	✓		✓	✓	✓			

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____
Flow _____ Other _____

Remarks:

	Date:	Time:		
Relinquished by: (Signature) Scott Ude	10/4/17	1430	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:

Chain of Custody Page 11 of 17

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L#
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Hold #
Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcwsolutions.com

Project Description: EP Fall 2017
City/State Collected: Artesia, NM

Phone: 512-684-3170
Fax:

Client Project #

Lab Project #: TRCATX-EP

Collected by (print): Scott Ude/HMI Team

Site/Facility ID #: EP (Navajo - Artesia)

P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Chain of Custody Page 12 of 17

ESC LABORATORY SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO2NO3	Cyanide	Rem./Contaminant	Sample # (lab only)
Dup-EP-03	Grab	GW		10/3/17	1200		✓	✓	✓	✓		✓	✓	✓			
MW-123	Grab	GW		10/3/17	1425		✓	✓	✓	✓		✓	✓	✓			
MW-10	Grab	GW		10/3/17	1340		✓	✓	✓	✓		✓	✓	✓			
Dup-EP-02	Grab	GW		10/3/17	1000		✓	✓	✓	✓		✓	✓	✓			
MW-22A	Grab	GW		10/3/17	1240		✓	✓	✓	✓		✓	✓	✓			
MW-88	Grab	GW		10/3/17	1155		✓	✓	✓	✓							
MW-4A	Grab	GW		10/3/17	1110		✓	✓	✓	✓		✓	✓	✓			
EB-EP-03	Grab	GW		10/3/17	1030		✓	✓	✓	✓		✓	✓	✓			
MW-5A	Grab	GW		10/3/17	1015		✓	✓	✓	✓		✓	✓	✓			
Dup-EP-01	Grab	GW		10/3/17	800		✓	✓	✓	✓		✓	✓	✓			

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ____

pH ____ Temp ____
Flow ____ Other ____

Remarks:

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/4/17	1430	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____
Temp: °C Bottles Received:
Date: Time:

Condition: (lab use only)
COC Seal Intact: ____Y ____N ____NA
pH Checked: NCF:

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: EP Fall 2017

City/State Collected: Artesia, NM

Phone: 512-684-3170 Fax:

Client Project #

Lab Project # TRCATX-EP

Collected by (print): Scott Uda/HMI Team

Site/Facility ID #: EP (Navajo - Artesia)

P.O. # 107027

Collected by (signature):

Immediately Packed on Ice N ____ Y ✔

Rush? (Lab MUST Be Notified)
____ Same Day 100%
____ Next Day 100%
____ Two Day 50%
____ Three Day 33%

Date Results Needed

Email? ___No ✔Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottles)	Anions: TDS	NO2/NO3	Cyanide			
MW-7A	Grab	GW		10/3/17	915		✓	✓	✓	✓		✓	✓	✓				
OCD-8A	Grab	GW		10/3/17	815		✓	✓	✓		✓	✓	✓	✓	✓			
Trip Blank-EP-02	Grab	GW		10/3/17	—		✓											
OCD-2A	Grab	GW		10/5/17	1640		✓	✓	✓	✓								
MW-11A	Grab	GW		10/3/17	1600							✓	✓	✓				
OCD-3	Grab	GW		10/3/17	1525		✓	✓	✓	✓								
OCD-4	Grab	GW		10/3/17	1450		✓	✓	✓	✓								
Trip Blank-EP-03	Grab	GW		10/3/17	—		✓											
OCD-1R	Grab	GW		10/3/17	1300		✓	✓	✓	✓		✓	✓	✓				
OCD-5	Grab	GW		10/3/17	1415		✓	✓	✓	✓		✓	✓	✓				

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

Remarks:

Relinquished by: (Signature) Scott Uda — Date: 10/4/17 — Time: 1430

Received by: (Signature)

Relinquished by: (Signature) — Date: — Time:

Received by: (Signature)

Relinquished by: (Signature) — Date: — Time:

Received for lab by: (Signature)

Analysis / Container / Preservative

Chain of Custody Page 3 of 17

ESC LAB SCIENCES

Account: TRCATX

Quote #

PO #

Chris McCord

Sample Receipt Checklist

Temp: °C

Received on Ice: Y / N

Custody Seals Present: Y / N / NA

Custody Seals Intact: Y / N / NA

Samples Intact: Y / N

pH Checked: NCF:

Chain of Custody Page 14 of 17

ESC LAB SCIENCES

Company Name/Address:	Billing Information:
TRC Solutions - Austin, TX 505 E. Huntland Dr, Ste 250 Austin, TX 78752	Accounts Payable 21 Griffin Road North Windsor, CT 06095
Report to: Julie Speer	Email To: jspeer@trcsolutions.com
Project Description: EP Fall 2017	City/State Collected: Artesia, NM
Phone: 512-664-3170 Fax:	Client Project #	Lab Project # TRCATX - EP
Collected by (print): Scott Ude/HMI Team	Site/Facility ID # EP (Navajo - Artesia)	P.O. # 107027
Collected by (signature):	Rush? (Lab MUST Be Notified) ___ Same Day ...200% ___ Next Day ...100% ___ Two Day ...50% ___ Three Day ...25%	Date Results Needed
Immediately Packed on Ice: N ___ Y ✓	Email? ___No ✓Yes FAX? ___No ___Yes	No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO3NO2	Cyanide			
EB-EP-02	Grab	GW		10/3/17	1210	✓	✓	✓	✓		✓	✓	✓				
MW-124	Grab	GW		10/3/17	1150	✓	✓	✓	✓		✓	✓	✓				
MW-70	Grab	GW		10/3/17	1110	✓	✓	✓	✓								
MW-18A	Grab	GW		10/3/17	1025	✓	✓			✓	✓	✓	✓	✓			
MW-87	Grab	GW		10/3/17	935	✓	✓	✓	✓								
MW-74	Grab	GW		10/4/17	1125	✓	✓	✓	✓		✓	✓	✓				
EB-EP-01	Grab	GW		10/4/17	1135	✓	✓	✓	✓		✓	✓	✓				
OCD-7AR	Grab	GW		10/4/17	1040	✓	✓	✓	✓		✓	✓	✓				
OCD-6	Grab	GW		10/4/17	955	✓	✓	✓	✓		✓	✓	✓				
MW-79	Grab	GW		10/4/17	855	✓	✓	✓	✓		✓	✓	✓				

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other: ___

Remarks:

Relinquished by: (Signature)	Date: 10/4/17	Time: 1430	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

pH ___ Temp ___
Flow ___ Other ___
Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐
Tracking #
Custody Seals Intact? ☐ Yes ☐ No ☐ N/A
Cooler Temp (°C): ___ Received: ___
Date: ___ Time: ___
Temp Blank Received: ☐ Yes ☐ No ☐ N/A
Containers Received at Correct Temp: ☐ Yes ☐ No ☐ N/A
Received for lab by: ___
Date: ___ Time: ___
pH Checked: ☐ NCF: ___

ESC Lab Sciences
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Client: ___
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Cooler:
Shipped Via:

Sample # (lab only)	Sample # (lab only)

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer
Email To: jspeer@trcsolutions.com

Project Description: EP Fall 2017
City/State Collected: Artesia, NM

Phone: 512-884-3170
Fax:
Client Project #
Lab Project #: TRCATX-EP

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: EP (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓
Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes
No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO2NO3	Cyanide	
EB-EP-04	Grab	GW		10/4/17	910		✓	✓	✓	✓		✓	✓	✓		
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														
	Grab	GW														

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other _____

pH _____ Temp _____
Flow _____ Other _____

Remarks:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/4/17	1030	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Sample Returned via: ✓ Client ☐ Courier ☐ UPS ☐ FedEx ☐ Other
Condition: ✓ (lab use only)
COC Seal Present/Intact: ___Y ___N ___NA
COC Signed/Accurate: ___Y ___N
Bottles arrive intact: ___Y ___N
Correct bottles used: ___Y ___N
Sufficient volume sent: ___Y ___N
If Applicable: VOA Zero Headspace: ___Y ___N
Preservation Correct/Checked: ___Y ___N

Chain of Custody Page 1 of 1

ESC LAB SCIENCES

Lab Use Only
Lab #
Table #
Acctnum: TRCATX
Template:
Prelogin:
TSR: Chris McCord
Quote #
Shipped Via:

Rec Contaminant	Cooler Received

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Spear
Email to: jspear@trcsolutions.com

Project Description: NCL Fall 2017
City/State Collected: Artesia, NM

Phone: 512-884-3170
Fax:
Client Project #
Lab Project #: TRCATX - NCL

Collected by (print): Scott Ude/HMI Team
Site/Facility ID #: NCL (Navajo - Artesia)
P.O. #: 107027

Collected by (signature):
Immediately Packed on Ice: N ____ Y ✓

Rush? (Lab MUST Be Notified)
____ Same Day 200%
____ Next Day 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed
Email? ___No ✓Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC	DRO	GRO	Short List Metals (Total & only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO2/NO3	Cyanide				
MW-45	Grab	GW		10/3/17	1645		✓	✓			✓	✓	✓	✓	✓				
MW-54A	Grab	GW		10/3/17	850		✓	✓		✓		✓	✓	✓					
NCL-49	Grab	GW		10/3/17	935		✓	✓		✓		✓	✓	✓					
Dup-NCL-01	Grab	GW		10/3/17	940		✓	✓		✓		✓	✓	✓					
Trip Blank-NCL-01	Grab	GW		10/3/17	—		✓												
MW-108	Grab	GW		10/3/17	1430		✓	✓		✓		✓	✓	✓					
NCL-31	Grab	GW		10/3/17	1515		✓	✓		✓		✓	✓	✓					
NCL-32	Grab	GW		10/3/17	1605		✓	✓		✓		✓	✓	✓					
EB-NCL-01	Grab	GW		10/3/17	1620		✓	✓		✓		✓	✓	✓					
NCL-44	Grab	GW		10/3/17	1655		✓	✓		✓		✓	✓	✓					

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/4/17	1430	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Analysis / Container / Preservative

Chain of Custody Page 16 of 17

ESC LAB SCIENCES

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Lab #
Table #
Acctnum: TRCATX
Template:
Prelogin:
PM: Chris McCord
PB:
Shipped Via:

Remarks / Containers | Sample # (lab only)

pH _____ Temp _____
Flow _____ Other _____

Sample Receipt Checklist
Samples returned via: ☐ UPS ✓ FedEx ☐ Courier ☐ _____
Tracking #
COC Seal Present: ___ Y ___ N ___ NA
COC Signed/Accurate: ___ Y ___ N
Bottles Received:
If preservation required by Login: Date/Time
Condition: (lab use only)

Company Name/Address:
TRC Solutions - Austin, TX
505 E. Huntland Dr, Ste 250
Austin, TX 78752

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Report to: Julie Speer

Email To: jspeer@trcsolutions.com

Project Description: NCL Fall 2017

City/State Collected: Artesia, NM

Phone: 512-694-3170
Fax:

Client Project #

Lab Project # TRCATX - NCL

Collected by (print): Scott Ude/HMI Team

Site/Facility ID # NCL (Navajo - Artesia)

P.O. # 107027

Collected by (signature):
Immediately Packed on Ice N ___ Y ✔

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✔Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	# of Cntrs	VOC	DRO	GRO	Short List Metals (Total & only)	Long List Metals (Total only)	Cations (from "total metals" bottle)	Anions, TDS	NO2/NO3	Cyanide				
NCL-34A	Grab	GW		10/4/17	930		✓	✓		✓		✓	✓	✓					
NCL-33	Grab	GW		10/4/17	1010		✓	✓		✓		✓	✓	✓					
MW-55	Grab	GW		10/4/17	1050		✓	✓	✓		✓	✓	✓	✓	✓				
	Grab	GW																	
	Grab	GW																	
	Grab	GW																	
	Grab	GW																	
	Grab	GW																	
	Grab	GW																	
	Grab	GW																	

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other: ____

Remarks:

pH ____ Temp ____
Flow ____ Other ____

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

A

Turnaround Time
Account: TRCATX
Template:
Prelogin:
PM: Chris McCord
Cooler:
Shipped Via:

Remarks/Contaminant | Sample # (lab only)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Scott Ude	10/4/17	1430	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ✔ Fedex ☐ Courier ☐
Temp: ____ °C Bottles Received:
Date: ____ Time: ____

Condition: (lab use only)
COC Seal Present: ___Y ___N ___NA
COC Signed/Accurate:
Bottles Arrive Intact:
Correct Bottles:
Sufficient Volume: