GW - 001

EVAPORATION PONDS

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Wednesday, February 21, 2018 9:29 AM
To:	'Robinson, Kelly'
Cc:	Griswold, Jim, EMNRD; Tsinnajinnie, Leona, NMENV; Hains, Allen S
Subject:	RE: Bloomfield Bulk Terminal N & S Evaporation Ponds Report (GW-1)
Attachments:	OCD EP Review Letter 2-21-18.pdf

Kelly:

Good morning. The New Mexico Oil Conservation Division (OCD) has completed its review of various correspondences, most recently Western Refining, Southwest, Inc.'s letter of January 26, 2018, related to the above subject.

Please find attached the above subject OCD review letter. A hard copy was placed in the U.S. Mail this morning.

OCD requests a description of all the wastewaters discharged into the North and South Ponds at the facility before COB on Friday, March 9, 2018.

Thank you.

From: Robinson, Kelly [mailto:Kelly.Robinson@andeavor.com]
Sent: Thursday, January 4, 2018 4:24 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Subject: RE: Bloomfield Pond Report (GW-1)

Good Afternoon Sir, and Happy New Year to you too!

My apologies for not providing an up-date earlier than now. As you might know, the pulling of water from the leak detection system has been a long process due in-part to the slow recovery rate into the leak detection tube for each volume of water extracted. Western contracted with a third party consultant to perform the field work for this effort. The methodology instilled included tracking of water volumes removed, calculated recovery rates, and tracking of data changes over time. The consultant is compiling the data as we speak, which includes all field efforts performed through December 2017. I have reached out to them requesting a date of which they think the final report will be ready for agency submittal. I anticipate hearing back from them with a firm schedule before end of business day tomorrow at the latest. As soon as I get that information, I will pass that information on to you.

Thank you for your time, and I will be in-touch with more detailed information shortly.

Have a great evening, Sir!

Kelly R. Robinson
Environmental Supervisor

111 County Road 4990
Bloomfield, NM 87413
Kelly.Robinson@andeavor.com
Office: (505) 632-4166| Cell: (505) 801-5616

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division

FEBRUARY 21, 2018

Kelly R. Robinson
Western Refining Southwest, Inc.
50 County Road 4990
Bloomfield, New Mexico 87413

Re: WESTERN REFINING SOUTHWEST, INC. BLOOMFIELD TERMINAL EVAPORATION PONDS
BLOOMFIELD TERMINAL, BLOOMFIELD, NM
OCD DISCHARGE PERMIT GW-001

Ms. Robinson,

The New Mexico Oil Conservation Division (OCD) has completed its review of the Western Refining Southwest, Inc. (Western) Evaporation Ponds letter of January 26, 2018.

On June 23, 2017, Western provided a letter documenting the following: 1) Evaporation pond monitoring schedule for OCD approval; 2) A scientific-industry based derived allowable leakage rate (ALR) criteria based on the liner material type(s) and dimensions of the evaporation ponds. An ALR of 902 gpd per 5-acre pond was calculated utilizing EPA Referenced literature calculations, i.e., EPA 1992, Action Leakage Rates for Leak Detection Systems (EPA 530-R-92-004); and 3) Evaluation, summary and graphs to assess potential impact(s) to groundwater from the evaporation ponds based on historical water quality data from nearby MWs, i.e., MWs- 1, 50, 51 and 67. MW data to be evaluated were inorganic general chemistry, organics, and metals parameters. OCD first became aware of fluids in the leak detection system (LDS) around 2008.

OCD comments are:

1) MW-52, MW-53, and MW-62 are down-gradient wells from the evaporation ponds and thus should be the first to show any potential impacts to water quality. MW-5 is in the area immediately down-gradient of the evaporation ponds and was dry. Acetone levels at about 180 ug/L were well below the health based standard of 14,100 ug/L.

2) Constituents detected in the pond water samples at concentrations above groundwater standards are barium, chloride, sulfate, and the total dissolved solids (TDS).

3) Barium was detected at a concentration of 1.7 mg/l in the metals analysis of the north pond water sample. This concentration exceeds any of the other pond water samples, which ranged from 0.05 mg/l to 0.31 mg/l and may have been impacted by the entrainment of sediment in the analysis. All other Barium analyses were below the groundwater standard of 1.0 mg/l, with most less than 0.034 mg/l. There was an increase in the total barium concentrations detected in the most recent (August 2016) groundwater samples collected at down-gradient monitoring wells MW-53 and

MW-62, but future analyses will need to be evaluated when available from the annual groundwater monitoring events to determine if this is an indication of a trend or only a random occurrence.

4) There was a marked increase in chloride concentrations moving down-gradient near monitoring wells MW-52 and MW-53. There is septic tank located on the north side of the regional transportation office, which is immediately up-gradient from monitoring wells MW-52 and MW-53. The highest observed concentrations of chloride in the groundwater samples is in monitoring well MW-53, which is the closet well down-gradient of the septic tank.

5) The lowest observed concentrations of chloride in the groundwater samples appear in the well (MW- 62) that is the closest well down-gradient of the evaporation ponds. As indicated on the graph, the concentrations of chloride in the water samples collected from the evaporation ponds are wide ranging, but all are above the concentrations observed in the background wells and the closest down-gradient well. There is no indication of a release of chloride from the evaporation ponds affecting groundwater in the down-gradient well MW-62.

6) Sulfate concentrations showed the highest concentrations by a significant margin occur in groundwater samples collected at background well location MW-BCK-2. The next highest concentrations occur in groundwater samples collected at background wells MW-BCK-1 and down-gradient monitoring well MW-62. Moving further down-gradient, the concentrations of samples collected from MW-52 and MW-53 show lower concentrations of sulfate, but still at or above 1,000 mg/l. The lowest sulfate concentrations reported are for the water samples collected from the evaporation ponds. Based on the observed analytical data, a release from the evaporation ponds would likely not be discernable due to the much higher concentrations already present in groundwater.

7) In summary, there is no clear evidence of a leak from the pond liners based on a review of the analyses of water samples collected from within the ponds, leak detection sumps, and groundwater monitoring wells located both down-gradient and up-gradient of the evaporation ponds. OCD concurs with the ALR of 902 gpd per 5-acre evaporation pond with water level at ~3 ft. based on EPA 530-R-92-004. The North and South Ponds (5 acres in size each) are below the ALR.

8) Recovery rates at the north pond decreased to approximately 60 to 70 gallons per event and volumes at the south pond decreased to only a few gallons per event, both LDS volumes below the potential leakage rate of 902 gallons/day calculated previously using US Environmental Protection Agency default values for similar lined ponds. The results of the recovery events show no indication of problems with the liner in the south pond. The recovery rates at the north pond are also significantly below the potential leakage rate for properly constructed ponds per EPA studies.

If you have any questions, please contact Carl Chavez at (505) 476-3490 or by email at CarlJ.Chavez@state.nm.us.

Sincerely,

Carl Chavez for Jim Griswold

Jim Griswold
Environmental Bureau Chief

JG/cc

Please note: My email address changed to **Kelly.Robinson@andeavor.com** on July 31, 2017. Please update your records.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, January 04, 2018 9:10 AM
To: Robinson, Kelly <Kelly.Robinson@andeavor.com>
Subject: Bloomfield Pond Report (GW-1)

Kelly:

Good morning and Happy New Year! Hope the Holidays were good for you.

Just following up on the pond monitoring and upcoming report. Can you give me a status update and report submittal date?

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD **and see "Publications")**

Western Refining

WNR LISTED NYSE

January 26, 2018

RECEIVED OCD

2018 JAN 29 P 12: 46

Mr. Carl J. Chavez, Environmental Engineer
Oil Conservation Division
New Mexico Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

FedEx Tracking #: 7713 3833 1891

RE: Western Refining Southwest, Inc. Bloomfield Terminal Evaporation Ponds
Bloomfield Terminal, Bloomfield, NM
OCD Discharge Permit GW-001

Dear Mr. Chavez:

Pursuant to my email of May 30, 2017, we have completed the exercise to recover water observed in the evaporation ponds leak detection systems. Recovery began on 8/8/2017 from the two detection tubes for the north pond using a submersible pump that operated at a pumping rate of 2 gallons per minute (gpm). On 8/10/2017 water was recovered with the same pump from the two detection tubes at the south pond. During both of these events, only minimal drawdown was observed, thus it was decided to use a pump with higher potential discharge rates. On subsequent events, a trash pump with potential pumping rates above 100 gpm was used initially, followed by additional pumping with the smaller 2 gpm submersible pump. Pumping continued through December 21, 2017 with weekly pumping events, which were temporarily suspended for two intervals (8/31/2017 to 9/19/2017 and 10/12/2017 to 11/7/2017) to observe water levels.

The recovery volumes are summarized in Table 1 and are plotted on the enclosed graph. The initial recovery volumes from each detection tube were limited by the pump capacity, but subsequent events using a higher displacement pump began to show significantly lower recovery volumes indicating a reduction in the available volume of water in the leak detection systems. This was particularly obvious in the recovery data from the south pond. Over the four-month period, approximately 3,930 gallons of water were recovered from the north pond and 1,292 gallons were recovered from the south pond.

As-built drawings show the length of 4-inch diameter perforated PVC leak detection piping under each pond to be 5,670 linear feet. Although the as-built drawings do not show specific dimensions of the trenches or gravel pack for the piping, a conservative estimate for the dimensions of the collection trench of 1 ft. by 1 ft., and a gravel porosity of 40% was used to estimate the volume available within the leak detection system. Using these assumptions, the leak detection system has a holding capacity of approximately 19,200 gallons for each pond.

The water level measurements, which represent the depth of water present in each detection tube and the depth of water present in the associated pond, are plotted on the enclosed figures. The water levels in the south pond detection tubes were fairly static prior to pumping in August 2017, when the levels dropped to near the bottom of the detection tubes. The south pond west tube has remained very low, while the south pond east tube has shown a slow recovery. The water levels in the north pond detection tubes showed a small decline during the period of active pumping. Water levels in both ponds began to decline before the pumping began and there is no indication of a direct correlation of water levels in either of the ponds and their associated detection tube fluid level measurements, thus indicating a lack of direct hydraulic communication between the ponds and the detection systems.

In summary, both water levels in the leak detection tubes and recovery volumes from the detection tubes decreased significantly in the south pond during the recovery events. While water levels measured in the detection tubes did not decline in the north pond as noticeably as in the south pond, the recovery volumes did decrease significantly. Throughout the entire four-month recovery period, the recovered volumes from the north pond (3,930 gallons) and south pond (1,292 gallons) were significantly less than one volume of the leachate collection system (19,200 gallons). The amount of water removed from the north and south pond leak detection systems during the four-month recovery period was only 20.4% and 6.7%, respectively, of the estimated volume of each leak detection system. Recovery rates at the north pond decreased to approximately 60 to 70 gallons per event and volumes at the south pond decreased to only a few gallons per event, both well below the potential leakage rate of 902 gallons/day calculated previously using US Environmental Protection Agency default values for similar lined ponds. The results of the recovery events show no indication of problems with the liner in the south pond. The recovery rates at the north pond are also significantly below the potential leakage rate for properly constructed ponds per EPA studies.

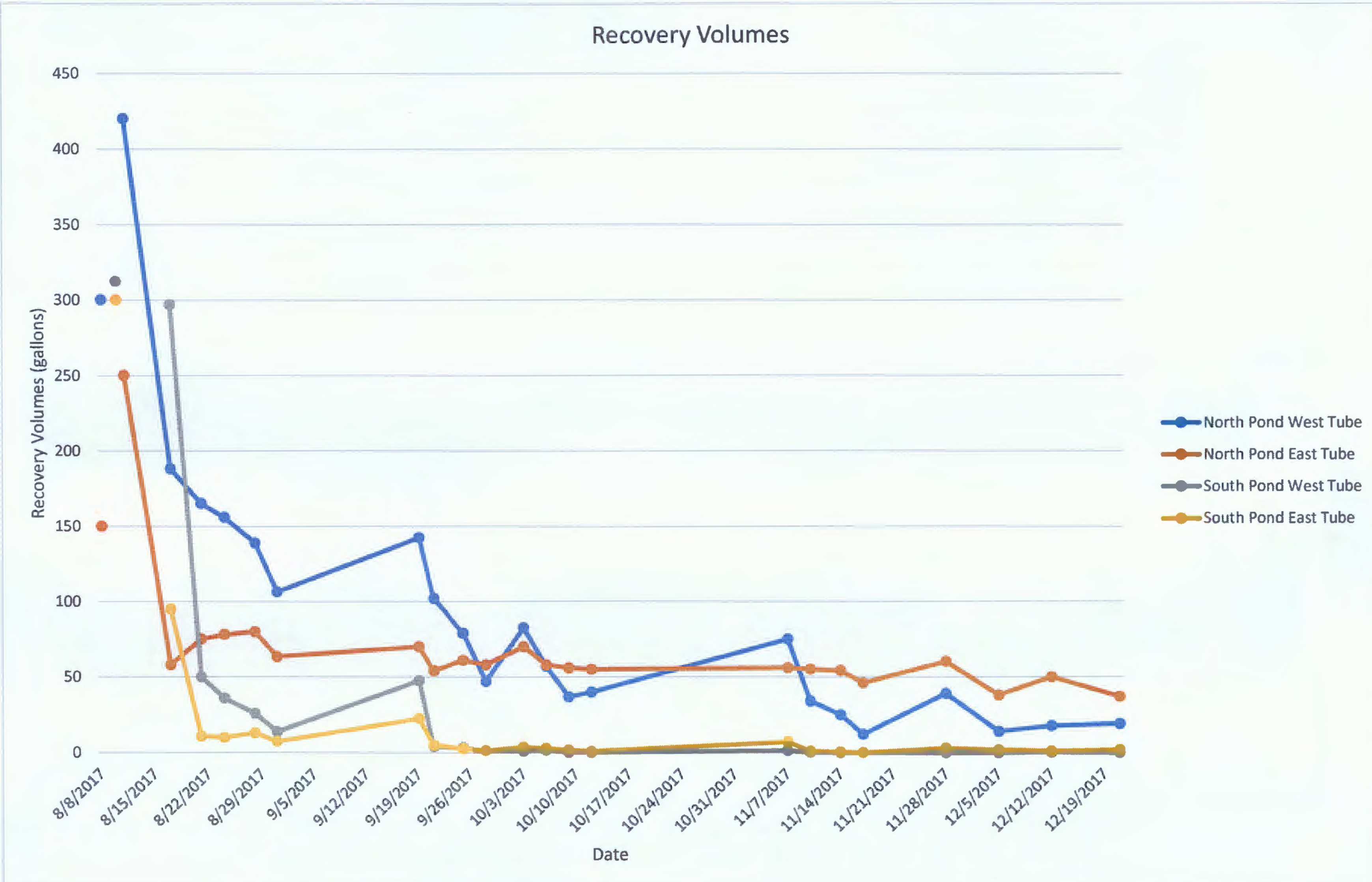
If there are any questions or would like to talk about this topic further, please feel free to contact me at (505) 632-4166 at your convenience.

Sincerely,

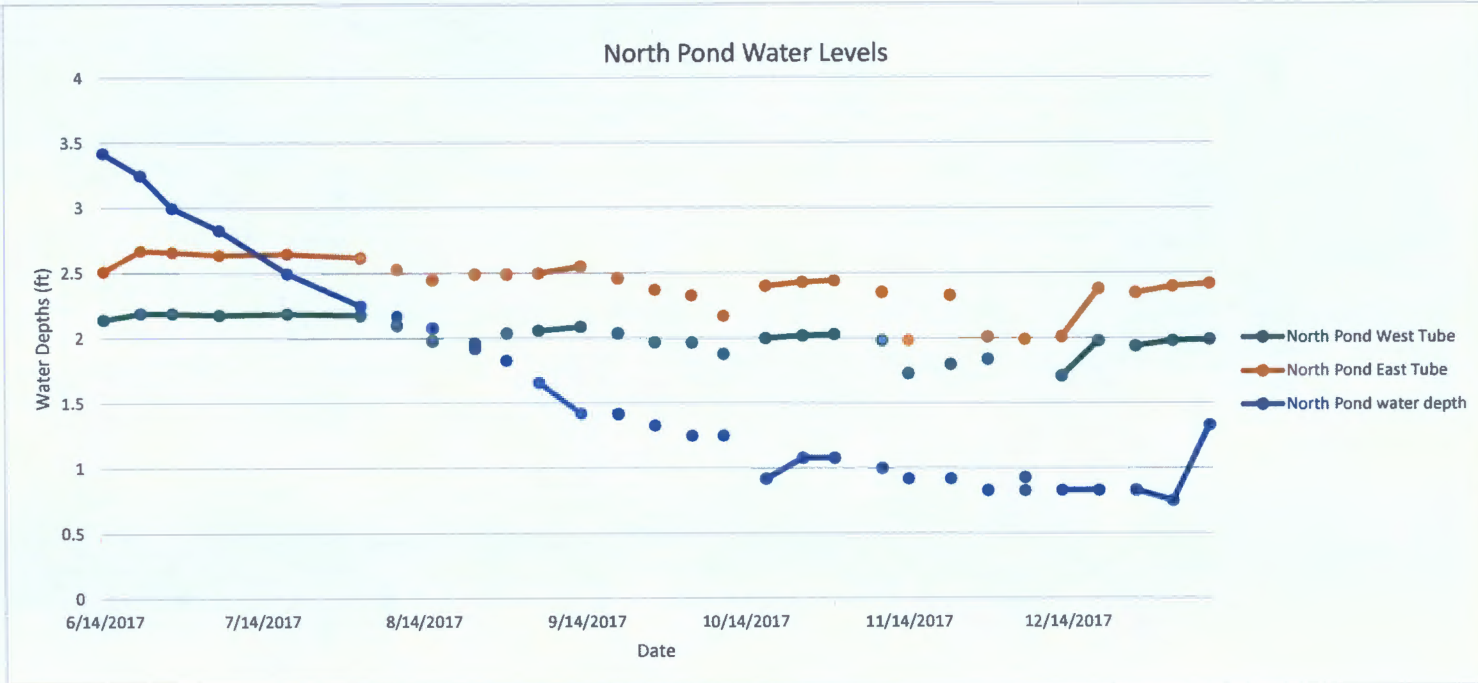
Kelly Robinson

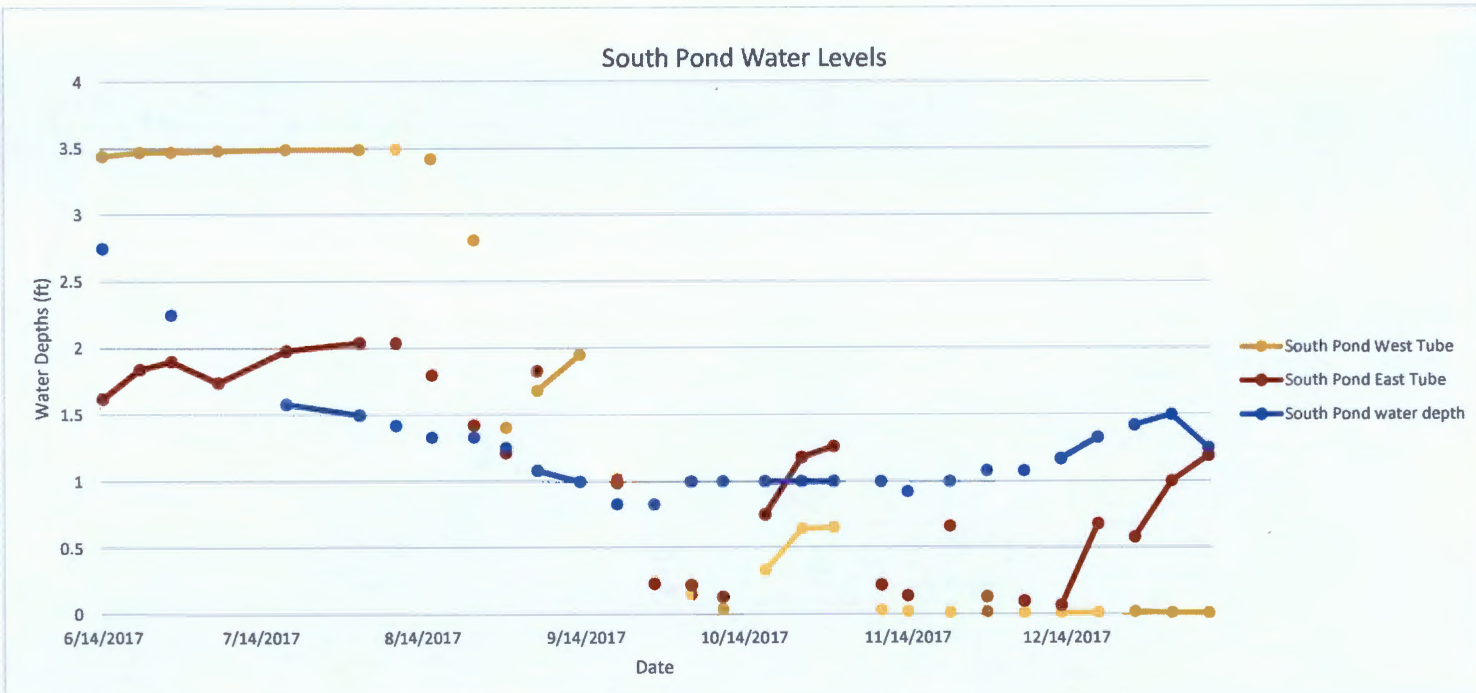
Kelly R. Robinson
Environmental Supervisor
Western Refining Southwest, Inc.

cc: T. Roberts



Recovery Volumes
Recovery Volumes (gallons)
450
400
350
300
250
200
150
100
50
0
8/8/2017
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
10/31/2017
11/7/2017
11/14/2017
11/21/2017
11/28/2017
12/5/2017
12/12/2017
12/19/2017
Date
North Pond West Tube
North Pond East Tube
South Pond West Tube
South Pond East Tube


North Pond Water Levels
4
3.5
3
2.5
2
1.5
1
0.5
0
Water Depths (ft)
6/14/2017
7/14/2017
8/14/2017
9/14/2017
10/14/2017
11/14/2017
12/14/2017
Date
North Pond West Tube
North Pond East Tube
North Pond water depth


South Pond Water Levels
4
3.5
3
2.5
2
1.5
1
0.5
0
Water Depths (ft)
6/14/2017
7/14/2017
8/14/2017
9/14/2017
10/14/2017
11/14/2017
12/14/2017
Date
South Pond West Tube
South Pond East Tube
South Pond water depth

Western Refining

WNR LISTED NYSE

June 23, 2017

Carl Chavez
NM Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South Saint Frances Drive
Santa Fe, NM 87505

Certified Mailer #: 7016 2140 0000 3867 3543

RE: Response to Evaporation Pond(s) Leak Detection Systems
NMOCD E-Mail dated June 01, 2017
Bloomfield Terminal (GW-001)

Dear Mr. Chavez:

On June 1, 2017, Western Refining Southwest, Inc. ("Western") received approval from the New Mexico Oil Conservation Division (OCD) on Western's proposal for an evaluation of the evaporation ponds leak detection system. The approval was contingent upon the following conditions:

1) provide a detailed schedule to OCD for approval;
2) include the scientific-industry based derived leakage rate criteria based on the liner material type(s) and dimensions of the evaporation ponds; and
3) include an evaluation, summary and graphs to assess potential impact(s) to groundwater from the evaporation ponds based on historical water quality data from nearby MWs, i.e., MWs- 1, 50, 51 and 67. MW data to be evaluated should consist of inorganic general chemistry, organics, and metals parameters. OCD first became aware of fluids in the LDS around 2008.

Each of these three conditions are addressed in the attached letter Report. If you have any questions or would like to discuss any of these topics in more detail, please feel free to contact Randy Schmaltz (HSE Manager) at (505) 632-4171 or myself at (505) 632-4166

Sincerely,

Kelly Robinson

Kelly R. Robinson
Environmental Supervisor
Western Refining – Logistics

cc: J. Griswold (NMOCD)
C. Smith (NMOCD)
R. Bayliss (NMOCD)
R. Schmaltz (WNR)

Bloomfield Terminal (GW-001) Evaporation Pond(s) Leak Detection System Evaluation

On June 1, 2017, Western Refining Southwest, Inc. ("Western") received approval from the New Mexico Oil Conservation Division (OCD) on Western's proposal for an evaluation of the evaporation ponds leak detection system. The approval was contingent upon the following conditions:

1) provide a detailed schedule to OCD for approval;
2) include the scientific-industry based derived leakage rate criteria based on the liner material type(s) and dimensions of the evaporation ponds; and
3) include an evaluation, summary and graphs to assess potential impact(s) to groundwater from the evaporation ponds based on historical water quality data from nearby MWs, i.e., MWs- 1, 50, 51 and 67. MW data to be evaluated should consist of inorganic general chemistry, organics, and metals parameters. OCD first became aware of fluids in the LDS around 2008.

Each of these three conditions are addressed below.

Schedule

Western will implement the proposed recovery operations within two weeks of the OCD's final approval. Western proposes to conduct recovery operations for a period of four weeks and will submit a summary report of the findings within 30 days of the conclusion of recovery operations, as requested by OCD.

Leakage Rate Calculations

The primary pond liners consist of 60 mill High Density Polyethylene (HDPE). The permeability of such liners is very low (Poly-Flex® 40 mil HPDE liners are indicated to have a pseudo coefficient of permeability in the order of 10^{-13} centimeters/second (cm/sec). The material used in the upper liner for the North Pond is identified as Firestone Reinforced Polypropylene Geomembrane with a rated water vapor permeance of 0.05 perms. One perm is equal to the passage of 1 grain of vapor through 1 square foot of 1 inch thick material in 1 hour under a pressure difference of 1 inch of mercury. Calculations of permeation through HDPE liners were performed by Giroud and Bonaparte in 1989 as shown in the table below.

Calculated Unitized Leakage Rate due to Permeation of Water Through a HDPE Geomembrane

water depth (ft)	0	0.01	0.1	1	10	>30
Unitized Leakage Rate (gpad)	0	0.000006	0.008	0.08	8	28

feet - ft

gallons per acre per day - gpad

Assuming a water depth of 3 feet and a pond area of five acres, the leakage rate would be estimated at only 1.2 gallons per day (0.08 gallons per day per acre x 5 acres x 3 feet). Evaluations of pond liners by EPA has shown that very rarely is the leakage rate determined by permeation, but rather imperfections in the liner (EPA, 1992). The actual leakage is commonly due to small penetrations of the liner or issues with seams during installation. Calculations of the flow rate through such defects have been developed as shown below (Giroud, et al, 1997).

$Q = (2/3)d^2\sqrt{g}h_{prim}$

Where:

Q = flow rate through one defect, meters $(m)^3$/sec
d – defect diameter, m
g – acceleration due to gravity, 9.81 m/sec^2
h_{prim} – head of liquid on top of primary liner, m

The United States Environmental Protection Agency (EPA) has conducted various studies of liner leakage rates and reviewed studies conducted by others (EPA, 1992). Based on these evaluations, a defect size of 3.2 square millimeters (mm) and defect frequency of one per acre is used in the calculation. Assuming a circular defect, the defect diameter is calculated as shown below.

$A = \pi \times r^2$

Where:

A = area (mm^2)
π = 3.14
r = radius (mm)

3.2 = 3.14 x r^2 3.2/3.14 = 1.019 = r^2

$r = \sqrt{1.019}$ = 1.01 mm; d = 2.02 mm

Potential Leakage Rate with Maximum Operational Head

The ponds have a maximum depth of 7 feet with an operational free board of 3 feet, thus the maximum head of liquid on top of the primary liner is assumed to be 4 feet or 1.22 meters. Assuming each pond covers five acres, the pond leakage rate is calculated as shown below:

$Q = \frac{2}{3} \times 0.00202^2 \times \sqrt{9.81 \times 1.22}$ x 5 (number of defects) = 0.000047 m^3/sec

Q = 0.000047 m^3/sec x 86,400 sec/day x 264.17 gallons/m^3 = 1,074 gallons/day

Potential Leakage Rate with Anticipated Head

Since the ponds have been in continuous operation in 2016 and 2017, the average operational head is estimated at 3 feet or 0.91 meters. Assuming each pond covers five acres and there is minimal accumulation of water above the secondary liner, the pond leakage rate is calculated as shown below:

$Q = \frac{2}{3} \times 0.00202^2 \times \sqrt{9.81 \times 0.91}$ x 5 (number of defects) = 0.000095 m^3/sec

Q = 0.0000395 m^3/sec x 86,400 sec/day x 264.17 gallons/m^3 = 902 gallons/day

Evaluation, Summary and Graphs of Historical Water Quality Data

OCD requested a review of water quality data from "nearby" monitoring wells and then referenced wells MW-1, MW-50, MW-51, and MW-67. A review of site well location maps indicates that the referenced wells are actually immediately down-gradient of the raw water pond and not the evaporation ponds. The evaporation ponds are approximately 2,000 feet southeast of the referenced list of wells. Western selected other wells (MW-52, MW-53, and MW-63) that are located the closest down-gradient of the evaporation ponds and thus should be the first to show any potential impacts to water quality (Figure 1). It is noted that MW-5, which is in the area immediately down-gradient of the evaporation ponds is dry.

Table 1 provides the available chemical analyses for the down-gradient monitoring wells (MW-52, MW-53, and MW-62). The analyses date back to 2010. In addition, chemical analyses are included for the background monitoring wells that were installed in the area to evaluate water quality up-gradient to any potential on-site sources of contamination (Figure 2). Recent chemical analyses collected from both the north and south evaporation pond, and their leak detection systems are also included.

The one organic analyte reported for the pond water samples is acetone. It was reported in the ponds at concentrations of 180 micrograms per liter (ug/l) and 23 ug/l in the south pond and north pond water samples, respectively. This is in comparison to the health-based standard of 14,100 ug/l developed by the New Mexico Environment Department. Acetone was not detected in the samples collected from the associated leak detection system at reporting limits of 20 ug/l and 10 ug/l, respectively for the south and north ponds. All of the detected concentrations and reporting limits for acetone are well below the health-based limit such that no threat exists to groundwater from the reported presence of very low concentrations of acetone in the pond water.

The only constituents detected in the pond water samples at concentrations above potential regulatory groundwater standards are barium, chloride, sulfate, and the total dissolved solids (TDS) analyses also exceed the associated regulatory standard. A summary of the detections of these three analyses, as well as, all other reported general chemistry parameters, total metals and dissolved metals are provided in Table 2. In addition, graphs of the concentrations of barium, chloride, sulfate, and TDS are attached.

Barium was detected at a concentration of 1.7 mg/l in the total metals analysis of the north pond water sample. This concentration far exceeds any of the other pond water samples, which range from 0.05 mg/l to 0.31 mg/l and may have been impacted by the entrainment of sediment in the totals analysis. As shown on the graph of barium concentrations, all other analyses are well below the groundwater action level of 1.0 mg/l, with most less than 0.034 mg/l. There was an increase in the total barium concentrations detected in the most recent (August 2016) groundwater samples collected at down-gradient monitoring wells MW-53 and MW-62, but future analyses will need to be evaluated when available from the annual groundwater monitoring events to determine if this is an indication of a trend or only a random occurrence.

As shown on the attached graph of chloride concentrations, the concentrations are very low in both background wells and the closest down-gradient monitoring well (MW-62). There is a marked increase in chloride concentrations moving down-gradient near monitoring wells MW-52 and MW-53. As shown on Figure 1, there is septic tank located on the north side of the regional transportation office, which is immediately up-gradient from monitoring wells MW-52 and MW-53. The highest observed concentrations of chloride in the groundwater samples is in monitoring well MW-53, which is the closet well down-gradient of the septic tank. Chloride is a common constituent found in groundwater at elevated concentrations that is associated with septic systems (Katz, et al, 2011). The lowest observed concentrations of chloride in the groundwater samples appear in the well (MW-62) that is the closest well down-gradient of the evaporation ponds. As indicated on the graph, the concentrations of chloride in the water samples collected from the evaporation ponds are wide ranging, but all are above the concentrations observed in the background wells and the closest down-gradient well. There is no indication of a release of chloride from the evaporation ponds affecting groundwater in the down-gradient well MW-62.

A review of the sulfate concentrations on the attached graph show the highest concentrations by a significant margin occur in groundwater samples collected at background well location MW-BCK-2. The next highest concentrations occur in groundwater samples collected at background wells MW-BCK-1 and down-gradient monitoring well MW-62. Moving further down-gradient, the concentrations of samples collected from MW-52 and MW-53 show lower concentrations of sulfate, but still at or above 1,000 mg/l. The lowest sulfate concentrations reported are for the water samples collected from the evaporation ponds. Based on the observed analytical data, a release from the evaporation ponds would likely not be discernable due to the much higher concentrations already present in groundwater.

The TDS analyses are only available for the pond water samples and groundwater samples collected from the background monitoring wells. As indicted on the graph, the values for TDS are lower in the pond water samples than in either of the background monitoring locations. Similar to sulfate, as the water quality based on TDS is better in the ponds than what may be expected in groundwater in the area, TDS may not be useful to determine if there have been any leaks in the pond liners.

There are a number of other constituents detected in groundwater for which there are no applicable water quality criteria (e.g., calcium, magnesium, potassium, and sodium). The New Mexico Environment Department refers to these constituents as "essential nutrients." Calcium was selected as being representative of these constituents based on a similar distribution of concentrations across the various sampling locations. As shown on the attached graph, the concentration of calcium detected in groundwater samples from the down-gradient and up-gradient background monitoring wells are all fairly consistent with concentrations generally ranging from 300 mg/l to 450 mg/l. The concentrations of calcium in water samples collected from the ponds are mostly lower than the concentrations in reported in the groundwater samples. Due to generally higher or similar concentrations in groundwater, including nearby background locations, these constituents may not be of particular value in assessing potential leaks from the pond liners.

In summary, there is no clear evidence of a leak from the pond liners based on a review of the analyses of water samples collected from within the ponds, leak detection sumps, and groundwater monitoring wells located both down-gradient and up-gradient of the evaporation ponds.

REFERENCES

EPA, 1992, *Action Leakage Rates for Leak Detection Systems*, EPA 530-R-92-004.

Giroud, J.P. and Bonaparte, R., 1989, *Leakage through Liners Constructed with Geomembranes – Part 1. Geomembrane Liners*, Geotextiles and Geomembranes, Elsevier Science Publishers, Ltd., England.

Giroud, J.P, Gross, B.A., Bonparte, R., and McKelvey, J.A., 1997, *Leachate Flow in Leakage Collection Layers Due to Defects in Geomembrane Liners*, Geosynthetic International, Vol. 4, No. 3-4, pp. 215-292.

Katz, B.G., Eberts, S.M., and Kauffman, L.J., 2011, *Using Cl/Br Ratios and Other Indicators to Assess Potential Impacts on Groundwater Quality from Septic Systems: A Review and Examples from Principal Aquifers in the United States*, Journal of Hydrology, 397 (2011) pp. 151-166.

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			North Pond			South Pond			MW-52							MW-53							MW-62						
			NE Tube	NW Tube	Pond	SE Tube	SW Tube	Pond	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10
Volatile Organic Compounds (ug/L)																													
1,1,1,2-Tetrachloroethane	5.72E+00	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	6.00E+01	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	1.00E+01	(3)	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,1,2-Trichloroethane	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	2.50E+01	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5.00E+00	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	7.47E-03	(4)	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2,4-Trichlorobenzene	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	1.50E+01	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	2.00E-01	(2)	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
1,2-Dibromoethane (EDB)	5.00E-02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	6.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane (EDC)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	1.20E+01	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	7.30E+02	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	7.50E+01	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1-Methylnaphthalene	2.30E+00	(1)	NA	NA	NA	NA	NA	NA	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
2,2-Dichloropropane	-	-	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
2-Butanone	5.56E+03	(4)	NA	NA	NA	NA	NA	NA	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Chlorotoluene	7.30E+02	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Hexanone	-	-	NA	NA	NA	NA	NA	NA	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Methylnaphthalene	1.50E+02	(1)	NA	NA	NA	NA	NA	NA	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
4-Chlorotoluene	2.60E+03	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-pentanone	-	-	NA	NA	NA	NA	NA	NA	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	1.41E+04	(4)	< 10	< 10	**23**	<20	<20	**180**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	2.00E+01	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	1.34E+00	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	8.50E+00	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	7.54E+00	(4)	NA	NA	NA	NA	NA	NA	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Carbon disulfide	8.10E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Carbon Tetrachloride	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	-	-	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Chloroform	1.00E+02	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	2.03E+01	(4)	NA	NA	NA	NA	NA	NA	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
cis-1,2-DCE	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	1.68E+00	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	3.70E+02	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	1.97E+02	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	7.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	8.60E-01	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	4.47E+02	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl tert-butyl ether (MTBE)	1.43E+02	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 3.0	< 3.0	< 3.0	< 2.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Naphthalene	1.65E+00	(4)	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 3.0	< 3.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 3.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
n-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	< 3.0	< 3.0	< 3.0	< 3.0	< 1.0	< 1.0	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 1.0	< 1.0	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 1.0	< 1.0
n-Propylbenzene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene (PCE)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	7.50E+02	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-DCE	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	4.30E-01	(1)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene (TCE)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	1.14E+03	(4)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl chloride	1.00E+00	(3)	NA	NA	NA	NA	NA	NA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			North Pond			South Pond			MW-52							MW-53							MW-62						
			NE Tube	NW Tube	Pond	SE Tube	SW Tube	Pond	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10
Xylenes, Total	6.20E+02	(3)	NA	NA	NA	NA	NA	NA	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Semi Volatile Organic Compounds (ug/l):																													
1,2,4-Trichlorobenzene	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
1,2-Dichlorobenzene	6.00E+02	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
1,3-Dichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene	7.50E+01	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
1-Methylnaphthalene	2.30E+00	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2,4,5-Trichlorophenol	1.17E+03	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2,4,6-Trichlorophenol	1.19E+01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2,4-Dichlorophenol	4.53E+01	(4)	NA	NA	NA	NA	NA	NA	< 20	NA	< 20	< 20	< 20	< 20	< 20	< 20	NA	< 22	< 20	< 20	< 20	< 20	< 20	---	< 20	< 20	< 20	< 20	< 20
2,4-Dimethylphenol	3.54E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2,4-Dinitrophenol	3.88E+01	(4)	NA	NA	NA	NA	NA	NA	< 20	NA	< 20	< 20	< 20	< 20	< 20	< 20	NA	< 22	< 20	< 20	< 20	< 20	< 20	---	< 20	< 20	< 20	< 20	< 20
2,4-Dinitrotoluene	2.37E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2,6-Dinitrotoluene	3.70E+01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2-Chloronaphthalene	2.90E+03	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2-Chlorophenol	9.10E+01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2-Methylnaphthalene	1.50E+02	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2-Methylphenol	1.80E+03	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 20	< 10	< 10	< 10	< 10	< 10	NA	< 22	< 10	< 10	< 10	< 10	< 10	---	< 20	< 10	< 10	< 10	< 10
2-Nitroaniline	1.10E+02	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
2-Nitrophenol	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
3,3´-Dichlorobenzidine	1.50E-01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
3+4-Methylphenol	1.80E+02	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
3-Nitroaniline	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
4,6-Dinitro-2-methylphenol	-	-	NA	NA	NA	NA	NA	NA	< 20	NA	< 20	< 20	< 20	< 20	< 20	< 20	NA	< 22	< 20	< 20	< 20	< 20	< 20	---	< 20	< 20	< 20	< 20	< 20
4-Bromophenyl phenyl ether	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
4-Chloro-3-methylphenol	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
4-Chloroaniline	3.40E-01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
4-Chlorophenyl phenyl ether	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
4-Nitroaniline	3.40E+00	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 20	< 20	< 20	< 10	NA	< 11	< 10	< 20	< 20	< 20	< 10	---	< 10	< 10	< 20	< 20	< 20
4-Nitrophenol	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Acenaphthene	5.35E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Acenaphthylene	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Aniline	1.20E+01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Anthracene	1.72E+03	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Azobenzene	1.20E-01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzo(a)anthracene	3.43E-01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzo(a)pyrene	2.00E-01	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzo(b)fluoranthene	3.43E-01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzo(g,h,i)perylene	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzo(k)fluoranthene	3.43E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Benzoic acid	1.50E+05	(1)	NA	NA	NA	NA	NA	NA	< 20	NA	< 20	< 40	< 20	< 20	< 20	< 20	NA	< 22	< 40	< 20	< 20	< 20	< 20	---	< 20	< 40	< 20	< 20	< 20
Benzyl alcohol	1.80E+04	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroethoxy)methane	1.10E+02	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroethyl)ether	1.36E-01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroisopropyl)ether	9.76E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Bis(2-ethylhexyl)phthalate	6.00E+00	(2)	NA	NA	NA	NA	NA	NA	**12**	NA	< 10	< 10	< 10	< 10	< 10	**12**	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Butyl benzyl phthalate	3.50E+01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Carbazole	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Chrysene	3.43E+01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Dibenz(a,h)anthracene	1.06E-01	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Dibenzofuran	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Diethyl phthalate	1.48E+04	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Dimethyl phthalate	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Di-n-butyl phthalate	8.85E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Di-n-octyl phthalate	-	-	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Fluoranthene	8.02E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Fluorene	2.88E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Hexachlorobenzene	1.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	8.60E-01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Hexachlorocyclopentadiene	5.00E+01	(2)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Hexachloroethane	6.80E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Indeno(1,2,3-cd)pyrene	2.90E-02	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Isophorone	7.79E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Naphthalene	1.65E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Nitrobenzene	1.40E+00	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			North Pond			South Pond			MW-52							MW-53							MW-62						
			NE Tube	NW Tube	Pond	SE Tube	SW Tube	Pond	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10	Aug-16	Aug-15	Aug-14	Aug-13	Aug-12	Aug-11	Aug-10
N-Nitrosodimethylamine	4.90E-03	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
N-Nitrosodi-n-propylamine	9.60E-03	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
N-Nitrosodiphenylamine	1.21E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Pentachlorophenol	1.00E+00	(2)	NA	NA	NA	NA	NA	NA	< 20	NA	< 20	< 20	< 20	< 20	< 20	< 20	NA	< 22	< 20	< 20	< 20	< 20	< 20	---	< 20	< 20	< 20	< 20	< 20
Phenanthrene	1.70E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Phenol	5.00E+00	(3)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Pyrene	1.17E+02	(4)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
Pyridine	3.70E+01	(1)	NA	NA	NA	NA	NA	NA	< 10	NA	< 10	< 10	< 10	< 10	< 10	< 10	NA	< 11	< 10	< 10	< 10	< 10	< 10	---	< 10	< 10	< 10	< 10	< 10
General Chemistry (mg/l):																													
Fluoride	1.6	(3)	NA	NA	NA	NA	NA	NA	< 0.50	0.44	0.49	0.43	0.85	0.69	0.76	< 0.10	< 0.10	0.11	< 0.10	0.4	0.22	0.29	< 2.0	< 0.10	< 2.0	< 0.10	< 0.5	0.14	<0.10
Chloride	250	(3)	520	480	920	1300	1100	360	640	560	820	670	720	690	600	960	920	1000	620	960	920	840	14	14	14	14	12	15.00	16
Nitrite	1	(2)	NA	NA	NA	NA	NA	NA	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	<2.0	<2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	<2.0	<2.0	< 1.0	< 0.10	< 0.10	< 0.10	*< 1	<0.10	<0.10
Bromide	-	-	1.9	1.5	4.7	4.5	5.3	1.8	4.1	2.2	2.0	1.8	1.5	1.70	1.70	2.1	3	2.2	2.1	1.7	1.80	1.80	< 0.10	< 0.10	< 0.10	< 0.10	< 0.5	<0.10	<0.10
Nitrate	10	(3)	NA	NA	NA	NA	NA	NA	42	19	18	20	19	15	3	9.3	12	6.8	14	12	11	8.10	< 1.0	< 0.10	0.38	< 0.10	*< 1	*<1.0	0.29
Phosphorus	-	-	NA	NA	NA	NA	NA	NA	< 10	< 10	< 0.50	< 10	< 10	<0.50	<0.50	< 10	< 0.50	< 0.50	< 10	< 0.5	<0.50	<0.50	< 10	< 10	< 10	< 10	< 2.5	<0.50	<0.50
Sulfate	600	(3)	390	370	85	960	650	49	1400	1100	1700	1200	1300	1200	1700	1000	980	1300	1200	1000	1000	990	4000	4000	4100	3600	3600	3700	5100
Carbon Dioxide (CO_2)	-	-	NA	NA	NA	NA	NA	NA	180	200	220	190	240	250	190	290	300	310	310	320	330	350	500	520	470	580	580	530	550
Alkalinity ($CaCO_3$)	-	-	487.1	420.5	420.8	492.8	588.8	361	174.8	207.5	170	200	220	270	190	318.5	329.8	330	350	340	370	350	550	573.9	500	620	610	550	550
Bicarbonate ($CaCO_3$)	-	-	487.1	420.5	420.8	492.8	588.8	361	174.8	207.5	170	200	220	270	190	318.5	329.8	330	350	340	370	350	550	573.9	500	620	610	550	550
Total Dissolved Solids	1000	(3)	1950	1800	2050	3810	3450	1240	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (mg/l):																													
Arsenic	0.01	(2)	NA	NA	NA	NA	NA	NA	< 0.020	< 0.020	< 0.020	< 0.10	< 0.02	<0.02	<0.02	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	<0.02	<0.02	< 0.020	< 0.020	< 0.020	< 0.020	<0.02	<0.02	0.024
Barium	1	(3)	0.070	0.075	1.7	0.05	0.061	0.31	0.14	0.099	0.052	0.27	0.22	0.087	0.11	0.64	0.051	0.041	0.039	0.038	0.15	0.078	0.33	< 0.020	< 0.020	0.31	0.021	0.048	0.032
Cadmium	0.005	(2)	NA	NA	NA	NA	NA	NA	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002
Chromium	0.05	(3)	NA	NA	NA	NA	NA	NA	<0.006	< 0.0060	< 0.0060	< 0.0060	<0.006	<0.006	<0.006	0.012	< 0.0060	< 0.0060	< 0.0060	<0.006	<0.006	<0.006	0.0071	< 0.0060	< 0.0060	0.015	<0.006	<0.006	<0.006
Lead	0.015	(2)	NA	NA	NA	NA	NA	NA	0.0059	< 0.0050	< 0.0050	< 0.025	<0.005	<0.005	<0.005	0.01	< 0.0050	< 0.0050	< 0.0050	<0.005	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	0.0097	<0.005	<0.005	<0.005
Selenium	0.05	(2)	NA	NA	NA	NA	NA	NA	0.065	0.069	< 0.050	< 0.050	<0.05	<0.05	<0.05	< 0.0050	< 0.050	< 0.050	< 0.050	<0.05	<0.05	<0.05	< 0.050	< 0.050	< 0.050	< 0.050	<0.05	<0.05	<0.05
Silver	0.05	(3)	NA	NA	NA	NA	NA	NA	< 0.005	< 0.0050	< 0.0050	< 0.025	<0.005	<0.005	<0.005	< 0.050	< 0.0050	< 0.0050	< 0.025	<0.005	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	< 0.0050	<0.005	<0.005	<0.005
Mercury	0.002	(3)	NA	NA	NA	NA	NA	NA	< 0.00020	< 0.00020	< 0.00020	< 0.00020	<0.0002	<0.0002	<0.0002	< 0.00020	< 0.00020	< 0.00020	< 0.00020	<0.0002	<0.0002	<0.0002	< 0.00020	< 0.00020	< 0.00020	< 0.00020	<0.0002	<0.0002	<0.0002
Dissolved Metals (mg/l):																													
Arsenic	0.1	(3)	NA	NA	NA	NA	NA	NA	< 0.020	< 0.020	< 0.020	0.0052	0.0031	0.0031	<0.02	< 0.020	< 0.020	< 0.020	0.0042	0.0027	0.0034	<0.02	< 0.020	< 0.020	< 0.020	< 0.010	< 0.001	0.001	<0.02
Barium	1	(3)	NA	NA	NA	NA	NA	NA	0.021	< 0.020	< 0.020	0.018	0.020	0.021	0.038	0.026	< 0.020	< 0.020	0.02	0.018	0.024	0.025	< 0.020	< 0.020	< 0.020	0.013	0.015	0.017	<0.02
Cadmium	0.01	(3)	NA	NA	NA	NA	NA	NA	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.002
Calcium	-	-	110	78	60	260	250	91	380	320	430	300	320	300	250	360	390	340	330	340	310	290	450	470	440	440	450	430	430
Chromium	0.05	(3)	NA	NA	NA	NA	NA	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	<0.006	<0.006	<0.006	< 0.0060	< 0.0060	< 0.0060	< 0.0060	<0.006	<0.006	<0.006	< 0.0060	< 0.0060	< 0.0060	< 0.0060	<0.006	<0.006	<0.006
Copper	1	(3)	NA	NA	NA	NA	NA	NA	< 0.0060	< 0.0060	< 0.0060	0.017	<0.006	<0.006	<0.006	< 0.0060	< 0.0060	< 0.0060	0.022	<0.006	<0.006	<0.006	< 0.0060	< 0.0060	< 0.0060	< 0.010	<0.006	<0.006	<0.006
Iron	1	(3)	NA	NA	NA	NA	NA	NA	3.9	2.2	4.1	0.39	2.3	0.12	0.7	0.21	< 0.020	0.029	< 0.020	< 0.02	0.036	0.13	1.3	0.15	< 0.020	0.026	0.089	0.97	0.87
Lead	0.05	(3)	NA	NA	NA	NA	NA	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0010	< 0.001	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	< 0.0010	< 0.001	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	< 0.0010	< 0.001	< 0.002	<0.005
Magnesium	-	-	39	32	39	52	50	26	100	77	110	76	82	76	70	54	56	59	55	54	51	48	38	38	39	38	39	39	37
Manganese	0.2	(3)	NA	NA	NA	NA	NA	NA	5.7	3.9	8.8	2.3	2.9	3.1	3.6	0.41	0.61	0.10	0.18	0.520	0.5	0.96	1.2	1.4	0.49	1.7	1.8	1.8	1.2
Potassium	-	-	14	15	50	20	20	7.1	5.6	4.7	5.6	5.7	5.1	4.4	4.4	5.3	5	5.1	5.9	4.7	4.8	5.3	10	9.5	9.7	9.1	10	11	10
Selenium	0.05	(3)	NA	NA	NA	NA	NA	NA	0.057	0.09	< 0.050	0.052	0.053	0.036	<0.05	< 0.050	< 0.050	< 0.050	0.021	0.010	0.02	<0.05	< 0.050	< 0.050	< 0.050	< 0.010	<0.005	<0.006	<0.05
Silver	0.05	(3)	NA	NA	NA	NA	NA	NA	< 0.0050	< 0.0050	< 0.0050	< 0.025	<0.005	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	< 0.025	<0.005	<0.005	<0.005	< 0.0050	< 0.0050	< 0.0050	< 0.0050	<0.005	<0.005	<0.005
Sodium	-	-	580	570	730	1000	930	320	650	560	590	590	630	600	560	800	780	750	740	780	750	700	1600	1500	1400	1400	1500	1400	1400
Uranium	0.03	(3)	NA	NA	NA	NA	NA	NA	< 0.10	< 0.10	< 0.10	0.0099	0.0093	0.0094	0.0072	< 0.10	< 0.10	< 0.10	0.018	0.016	0.015	0.0108	< 0.10	< 0.10	< 0.10	0.008	0.0075	0.0077	0.0066
Zinc	10	(3)	NA	NA	NA	NA	NA	NA	0.2	0.066	0.13	0.014	0.11	0.099	<0.05	0.028	0.025	< 0.020	< 0.010	0.073	0.17	<0.05	0.051	0.028	< 0.020	< 0.010	0.066	0.075	<0.05
Total Petroleum Hydrocarbons (mg/l):																													
Diesel Range Organics	-	-	NA	NA	NA	NA	NA	NA	< 0.20	< 0.20	< 0.20	< 0.20	< 0.2	<0.20	<0.20	< 0.20	< 0.20	< 0.20	< 0.20	<0.20	<0.20	<0.20	< 0.20	< 0.20	< 0.2	< 0.20	<0.20	<0.20	<0.20
Gasoline Range Organics	-	-	NA	NA	NA	NA	NA	NA	< 0.050	< 0.050	< 0.050	< 0.050	<0.05	<0.05	<0.05	< 0.050	< 0.050	< 0.050	< 0.050	<0.05	<0.05	<0.05	< 0.050	< 0.050	< 0.050	< 0.050	<0.05	<0.050	<0.05
Motor Oil Range Organics	-	-	NA	NA	NA	NA	NA	NA	< 2.5	< 2.5	< 2.5	< 2.5	<2.5	<2.5	<2.5	< 2.5	< 2.5	< 2.5	< 2.5	<2.5	<2.5	<2.5	< 2.5	< 2.5	< 2.5	< 2.5	<2.5	<2.5	<2.5

Notes:

(1) EPA - Regional Screening Levels (April 2009) - EPA Screening Levels.Tap Water

(2) EPA - Regional Screening Levels (April 2009) - MCL

(3) NMED WQCC standards - Title 20 Chapter 6, Part 2, - 20.6.2.3101 Standards for Ground Water of 10,000 mg/l TDS Concentration or less

(4) NMED TAP Water Screening Levels - NM Risk Assessment Guidance for Site Investigation and Remediation, December 2014 - Appendix A

\- = No screening level available

= Analytical result exceeds the respective screening level.

NA = not analyzed

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			MW-BCK-1									MW-BCK-2								
			Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12	Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12
Volatile Organic Compounds (ug/L)																				
1,1,1,2-Tetrachloroethane	5.72E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	6.00E+01	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1.00E+01	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	2.50E+01	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	5.00E+00	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	7.47E-03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	1.50E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	2.00E-01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (EDB)	5.00E-02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	6.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane (EDC)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	1.20E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	7.30E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	7.50E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	2.30E+00	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	5.56E+03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	7.30E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.50E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	2.60E+03	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	1.41E+04	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	2.00E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	1.34E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	8.50E+00	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	7.54E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	8.10E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	1.00E+02	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	2.03E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-DCE	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	1.68E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	3.70E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	1.97E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	7.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	8.60E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	4.47E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)	1.43E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	1.65E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	7.50E+02	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-DCE	1.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	4.30E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	5.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	1.14E+03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	1.00E+00	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			MW-BCK-1									MW-BCK-2								
			Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12	Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12
Xylenes, Total	6.20E+02	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi Volatile Organic Compounds (ug/l):																				
1,2,4-Trichlorobenzene	7.00E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	6.00E+02	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	7.50E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	2.30E+00	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1.17E+03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	1.19E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	4.53E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	3.54E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	3.88E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	2.37E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	3.70E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	2.90E+03	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	9.10E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.50E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	1.80E+03	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	1.10E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3´-Dichlorobenzidine	1.50E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3+4-Methylphenol	1.80E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	3.40E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	3.40E+00	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	5.35E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	1.20E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1.72E+03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Azobenzene	1.20E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	3.43E-01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2.00E-01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	3.43E-01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	3.43E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	1.50E+05	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	1.80E+04	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	1.10E+02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	1.36E-01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	9.76E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	6.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	3.50E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	3.43E+01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	1.06E-01	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	1.48E+04	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	8.85E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	8.02E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2.88E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	1.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	8.60E-01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	5.00E+01	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	6.80E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2.90E-02	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	7.79E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	1.65E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	1.40E+00	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 1
Analytical Summary
Bloomfield Terminal
Western Refining Southwest, Inc.

			MW-BCK-1									MW-BCK-2								
			Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12	Apr-14	Feb-14	Oct-13	Jul-13	Apr-13	Jan-13	Nov-12	Aug-12	Jun-12
N-Nitrosodimethylamine	4.90E-03	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	9.60E-03	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	1.21E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	1.00E+00	(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1.70E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	5.00E+00	(3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1.17E+02	(4)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	3.70E+01	(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry (mg/l):																				
Fluoride	1.6	(3)	**0.19**	**0.28**	**0.12**	**0.33**	**0.19**	**0.37**	**0.3**	< 0.1	**0.25**	<2.0	**0.74**	**0.63**	**0.6**	**0.48**	<2.0	<2.0	< 2	<2.0
Chloride	250	(3)	**31**	**32**	**33**	**30**	**32**	**32**	**31**	**32**	**35**	**19**	**19**	**19**	**18**	**20**	**21**	**20**	**21**	**21**
Nitrite	1	(2)	**0.48**	<0.10	<4.0	<1.0	<0.10	<1.0	<1.0	<0.10	<1.0	<4.0	<0.10	<1.0	**1.1 (4)**	**0.3**	<1.0	<1.0	<2.0	<2.0
Bromide	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	10	(3)	**0.48**	**0.54**	<4.0	<1.0	0.62	<1.0	<1.0	<2.0	<1.0	<4.0	<0.10	<1.0	**1.1 (4)**	<0.10	<1.0	<1.0	<2.0	<2.0
Phosphorus	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	600	(3)	**3000**	**2900**	**2800**	**2700**	**3000**	**3000**	**3100**	**3200**	**4100**	**7500**	**7600**	**7700**	**7200**	**8000**	**7600**	**8100**	**8800**	**7900**
Carbon Dioxide (CO_2)	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity ($CaCO_3$)	-	-	**120**	**110**	**130**	**140**	**140**	**140**	**170**	NA	**150**	**110**	**120**	**120**	**130**	**130**	**130**	**120**	NA	**110**
Bicarbonate ($CaCO_3$)	-	-	**120**	**110**	**130**	**140**	**140**	**140**	**170**	**130**	**150**	**110**	**120**	**120**	**130**	**130**	**130**	**120**	**120**	**110**
Total Dissolved Solids	1000	(3)	4650	4630	4670	4540	4810	4700	4620	4580	4470	12600	12700	12200	12200	12400	12300	12500	13200	12700
Total Metals (mg/l):																				
Arsenic	0.01	(2)	**0.02**	<0.0010	<0.0010	<0.005	<0.10	**0.0077**	**0.0038**	< 0.0025	**0.0084**	<0.020	<0.0050	<0.0050	<0.010	<0.020	<0.0025	<0.0025	< 0.0025	**0.0047**
Barium	1	(3)	**0.093**	**0.018**	**0.033**	**0.087**	**0.17**	**0.34**	**0.14**	**0.051**	**0.28**	**0.022**	**0.017**	**0.018**	**0.021**	**0.022**	**0.02**	**0.024**	**0.028**	**0.12**
Cadmium	0.005	(2)	<0.0020	<0.0020	<0.0020	<0.0020	<0.010	<0.0020	<0.0020	< 0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	< 0.002	<0.0020
Chromium	0.05	(3)	**0.0063**	<0.0060	<0.0060	**0.0088**	<0.030	**0.035**	**0.014**	< 0.006	**0.032**	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	< 0.006	**0.025**
Lead	0.015	(2)	<0.0050	<0.0010	<0.0010	**0.0052**	<0.025	**0.026**	**0.011**	**0.0038**	**0.033**	<0.0050	<0.0010	<0.0050	<0.0050	<0.0050	<0.0025	<0.0025	< 0.0025	**0.025**
Selenium	0.05	(2)	<0.050	**0.0096**	**0.0099**	**0.0085**	<0.25	**0.0074**	**0.0049**	**0.0091**	**0.006**	<0.050	<0.0050	<0.0050	<0.010	<0.050	**0.0036**	**0.0044**	**0.0067**	**0.0041**
Silver	0.05	(3)	<0.0050	<0.0050	<0.050	<0.025	<0.025	<0.005	<0.0050	< 0.005	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.0050	<0.0050	<0.0050	< 0.005	<0.0050
Mercury	0.002	(3)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.002	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.0002	<0.0010
Dissolved Metals (mg/l):																				
Arsenic	0.1	(3)	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.001	**0.0014**	<0.020	<0.0050	**0.0066**	<0.010	<0.0050	**0.0027**	**0.0028**	**0.0016**	**0.0027**
Barium	1	(3)	<0.020	**0.014**	**0.014**	**0.015**	**0.015**	**0.018**	**0.018**	**0.019**	**0.022**	<0.020	**0.017**	**0.016**	**0.017**	**0.018**	**0.02**	**0.021**	**0.026**	**0.035**
Cadmium	0.01	(3)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.010	<0.0020	< 0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.010	<0.0020	< 0.002	<0.0020
Calcium	-	-	**400**	**400**	**390**	**350**	**410**	**400**	**440**	**410**	**420**	**390**	**410**	**380**	**350**	**400**	**390**	**420**	**410**	**390**
Chromium	0.05	(3)	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	< 0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	< 0.006	<0.0060
Copper	1	(3)	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	< 0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	< 0.006	<0.0060
Iron	1	(3)	**0.051**	<0.020	**0.024**	**0.081**	**0.055**	**0.11**	**0.065**	**0.038**	**0.1**	<0.020	**0.28**	**0.37**	<0.020	**0.020**	**0.15**	**0.051**	< 0.02	**0.94**
Lead	0.05	(3)	<0.005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.001	<0.0010	<0.0050	<0.0010	<0.0050	<0.010	<0.0050	<0.0010	<0.0010	< 0.005	<0.0050
Magnesium	-	-	NA	**60**	**68**	**66**	**66**	**68**	**70**	**62**	**64**	NA	**53**	**51**	**49**	**52**	**52**	**52**	**49**	**47**
Manganese	0.2	(3)	**0.039**	**0.011**	**0.021**	**0.048**	**0.047**	**0.089**	0.21	**0.170**	0.39	0.96	1.1	0.99	0.97	1.2	1.1	0.85	1.00	1.1
Potassium	-	-	**3.6**	**3.2**	**3.6**	**3.8**	**4.6**	<5	**3.8**	**5.2**	**4.4**	**17**	**15**	**16**	**17**	**20**	**15**	**18**	**20**	**18**
Selenium	0.05	(3)	<0.05	**0.011**	**0.011**	**0.0071**	**0.0083**	**0.0068**	**0.0067**	**0.0085**	**0.0069**	<0.050	<0.0050	**0.023**	<0.010	**0.0059**	**0.0077**	**0.0073**	**0.0042**	**0.0079**
Silver	0.05	(3)	<0.0050	<0.0050	<0.10	<0.025	<0.0050	<0.025	<0.0050	< 0.005	<0.0050	<0.0050	<0.0050	<0.25	<0.025	<0.0050	<0.025	<0.0050	< 0.005	<0.0050
Sodium	-	-	**920**	**890**	**890**	**880**	**870**	**900**	**930**	**900**	**950**	**3600**	**3400**	**4000**	**3200**	**3400**	**3400**	**3500**	**3500**	**3700**
Uranium	0.03	(3)	<0.1	**0.0048**	**0.0043**	**0.0042**	**0.0045**	**0.0047**	**0.0060**	**0.0073**	**0.012**	<0.10	<0.0010	<0.0050	<0.010	<0.0050	**0.0012**	**0.0013**	< 0.005	<0.005
Zinc	10	(3)	**0.025**	**0.12**	<0.010	**0.013**	<0.010	**0.34**	**0.38**	**0.20**	**0.012**	**0.024**	**0.088**	<0.010	**0.014**	<0.010	<0.050	**0.25**	**0.10**	**0.03**
Total Petroleum Hydrocarbons (mg/l):																				
Diesel Range Organics	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Range Organics	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) EPA - Regional Screening Levels (April 2009

(2) EPA - Regional Screening Levels (April 2009

(3) NMED WQCC standards - Title 20 Chapter 6

(4) NMED TAP Water Screening Levels - NM Ri

- = No screening

= Analytical resu

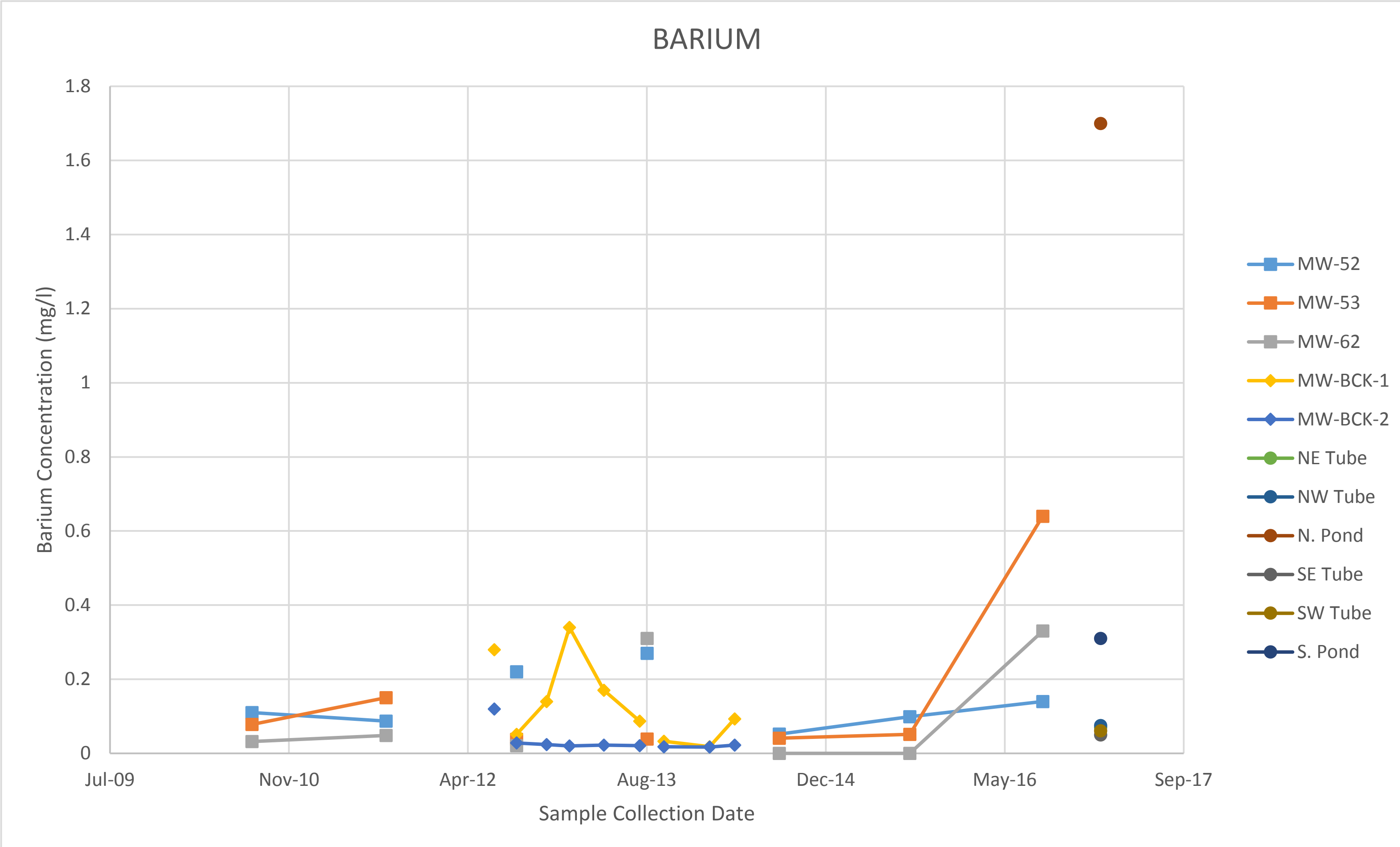
NA = not analyzed

Table 2
Summary of Detections
Bloomfield Terminal
Western Refining Southwest, Inc.

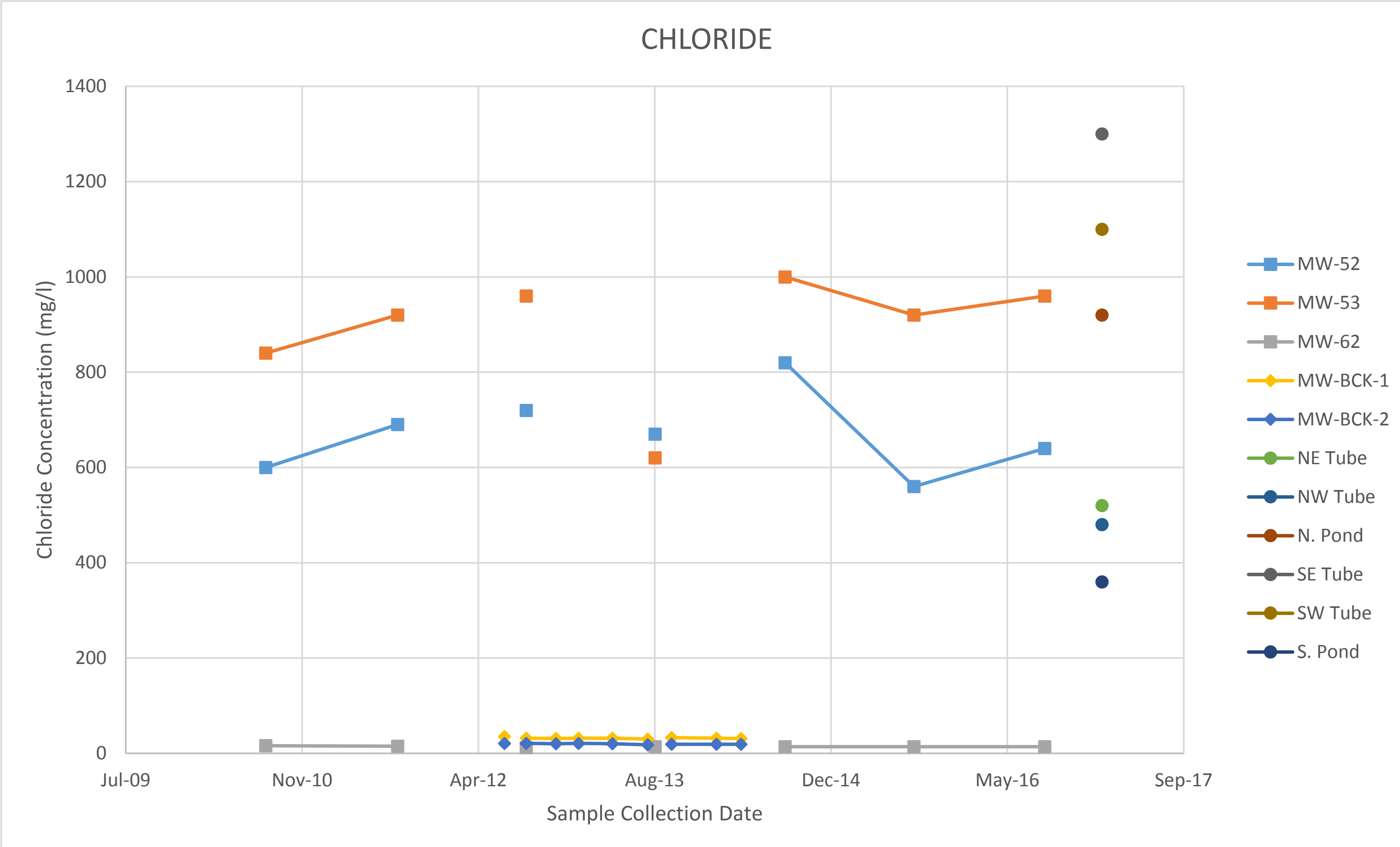
Analyte	Summary of Detections
General Chemistry	
Fluoride	It was not analyzed in the pond water samples, but detected concentrations were as high in the background wells as in wells down-gradient of evaporation ponds.
Chloride	Concentration is slightly lower in MW-62, which is immediately down-gradient of evaporation pond in comparison to concentrations in samples collected at background wells. Concentrations in pond samples are higher than background or closest down-gradient well and actually closer to concentrations detected in the furthest down-gradient wells (MW-52 and MW-53).
Nitrite	Most results are non-detect in samples collected at both background wells and wells down-gradient of evaporation ponds. No analyses from pond samples.
Bromide	Not detected in samples from closest down-gradient well (MW-62). Concentrations in groundwater samples from MW-52 and MW-53 generally fall between concentrations detected in water samples from evaporation ponds.
Nitrate	Not analyzed in pond water samples. Concentrations in closest down-gradient well (MW-62) are similar to concentrations detected in samples from background wells.
Phosphorus	Not analyzed in pond water samples, and not detected in any of the water samples collected from nearby monitoring wells.
Sulfate	The concentrations detected in the pond water samples are significantly lower than the concentrations measured in the down-gradient as well as background wells.
Carbon Dioxide ($CO_{2)}$	Only measured in water samples from nearby monitoring wells, thus no basis for comparison to wells or background areas.
Alkalinity ($CaCO_3$)	The concentrations generally tend to decrease down-gradient away from the evaporations ponds moving from MW-62 to MW-53 and then MW-52. However, the concentrations in the pond are generally lower than those observed in samples collected from MW-62. The lowest concentrations were detected in groundwater samples collected at the background wells.
Bicarbonate ($CaCO_3$)	same as alkalinity expressed as CaCO3.
Total Dissolved Solids	The concentrations are less in the pond water samples than either of the two background monitoring well samples. No results reported for the nearby monitoring wells.
Total Metals	
Arsenic	The groundwater concentrations are generally low when detected, with most results listed as not-detect. There is no discernable trend.
Barium	The concentrations are variable in all of the sample locations but generally low with no observed trends.
Cadmium	Cadmium was not detected in any of the groundwater samples.
Chromium	Chromium was not analyzed in the pond water samples. It was not detected in most groundwater samples and where detected it was only at low concentrations.
Lead	Lead was not analyzed in the pond water samples. It was not detected in most groundwater samples and where detected it was only at low concentrations.
Selenium	Selenium was not analyzed in the pond water samples. It was not detected in most groundwater samples and where detected it was only at low concentrations with the exception of two samples collected at further most down-gradient well (MW-52).
Silver	Silver was not analyzed on the pond water samples and was not detected in any of the groundwater samples.
Mercury	Mercury was not analyzed for the pond water samples and was not detected in any of the groundwater samples.

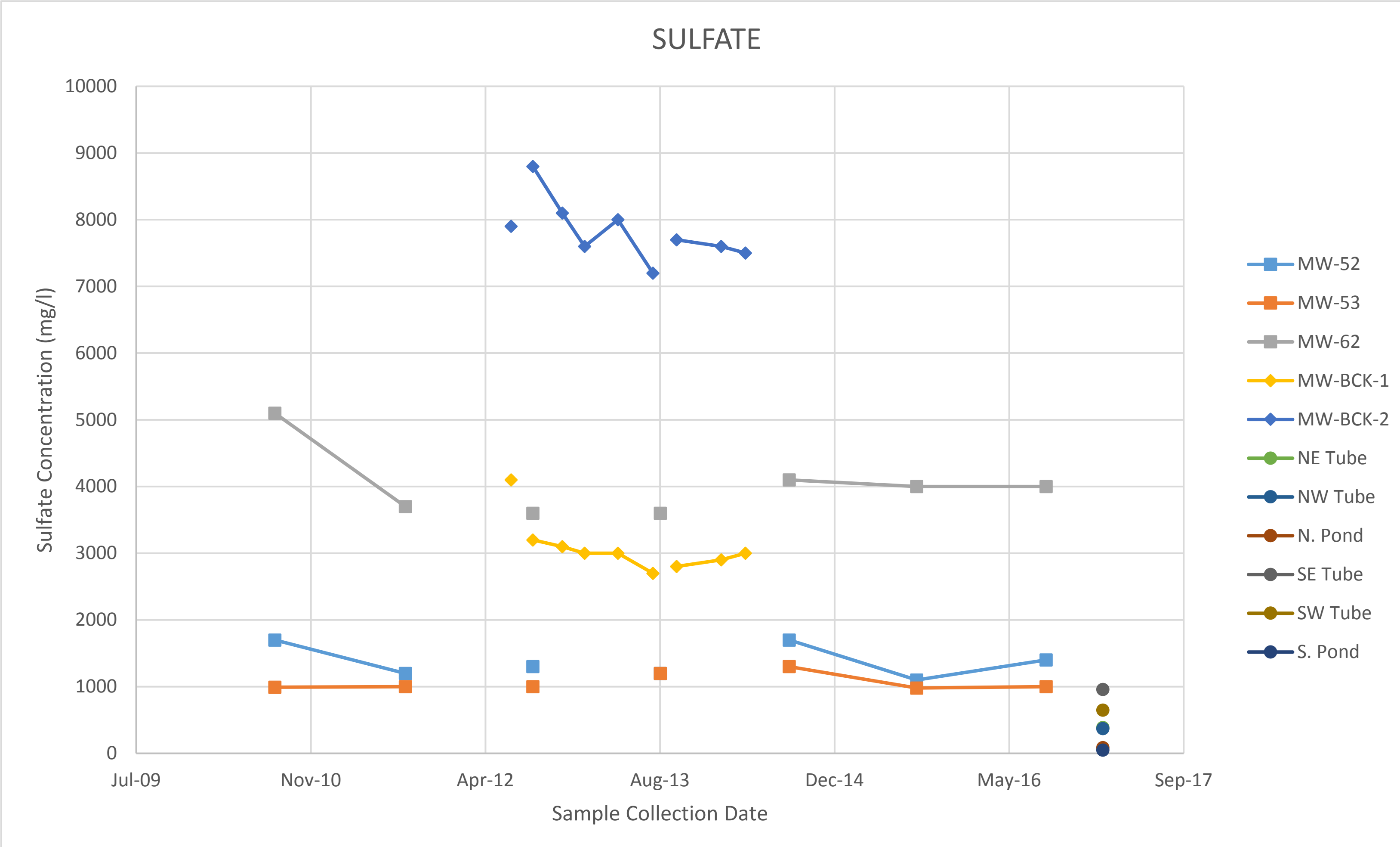
Table 2
Summary of Detections
Bloomfield Terminal
Western Refining Southwest, Inc.

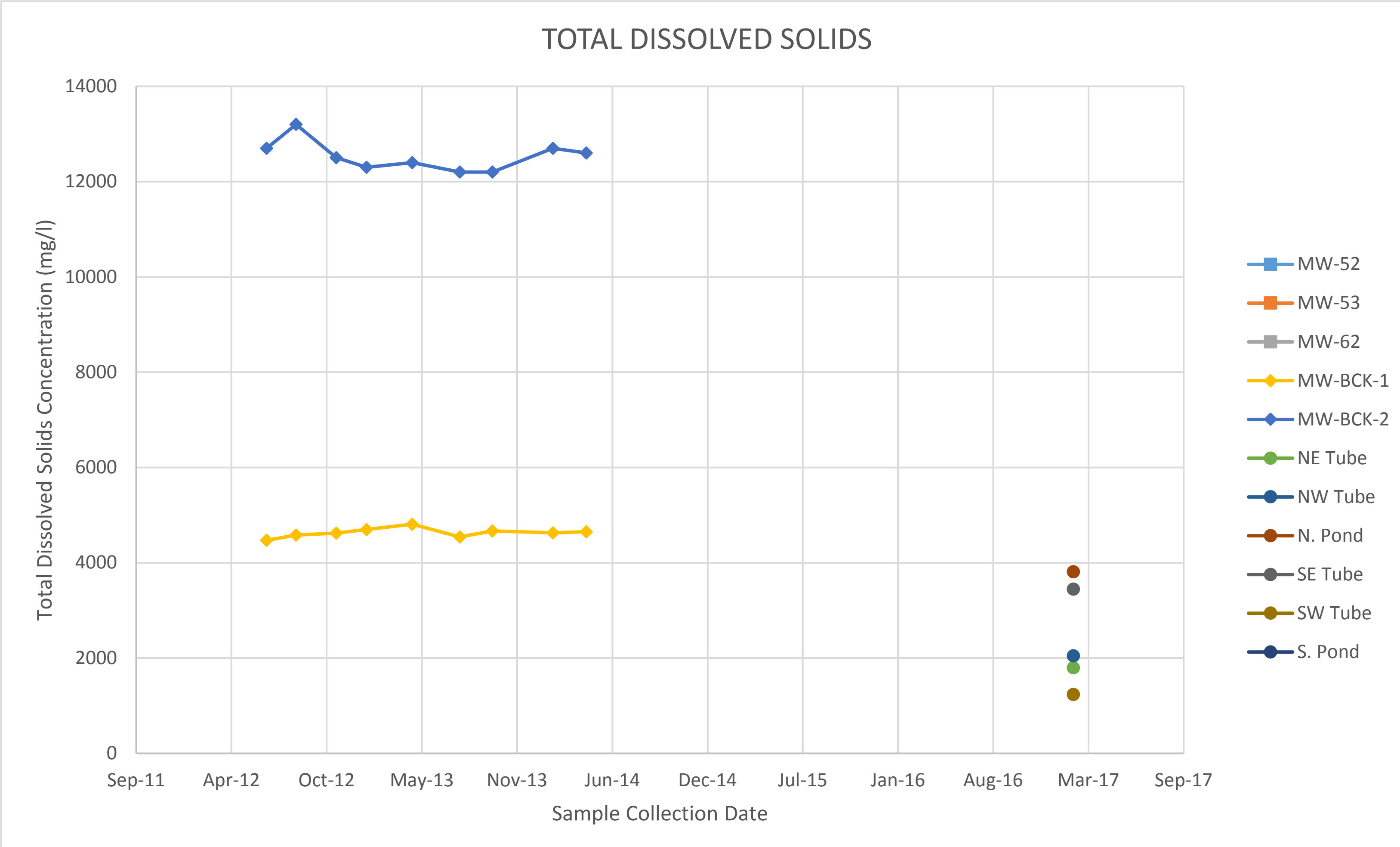
Analyte	Summary of Detections
Dissolved Metals	
Arsenic	The groundwater concentrations are generally low when detected, with most results listed as not-detect.
Barium	The concentrations are variable in all of the groundwater sample locations but generally low with no observed trends.
Cadmium	Cadmium was not analyzed in the pond water samples and was not detected in any of the groundwater samples.
Calcium	Calcium concentrations are fairly consistent across all of the groundwater samples, with lower concentrations observed in the pond water samples.
Chromium	While not analyzed in the pond water samples, chromium was not detected in any of the groundwater samples.
Copper	Copper was not analyzed in the pond water samples and was not detected in most of the groundwater samples. It was detected at only very low concentrations.
Iron	Iron was not analyzed in the pond water samples. The concentrations of iron were lowest in the groundwater samples collected in the background wells and highest in the well (MW-52) located the furthest down-gradient from the evaporation ponds.
Lead	Lead was not analyzed in the pond water samples and not detected in any of the groundwater samples.
Magnesium	There is not a lot of difference in concentrations between the pond water samples and the groundwater samples. There appears to be a slight increasing trend going down-gradient from MW-62 to MW-52; however, the background wells have concentrations that fall within the concentrations measured in the individual down-gradient monitoring wells. The concentrations in the ponds are generally less than those reported in the groundwater samples.
Manganese	Manganese was not analyzed in the pond water samples. It was detected in many of the groundwater samples with the highest concentrations actually detected in MW-52, which is the furthest down-gradient well away from the evaporation ponds.
Potassium	Potassium was detected in all samples at generally low concentrations. Similar concentrations are observed in the pond water samples and some of the background groundwater samples.
Selenium	Selenium was not analyzed in the pond water samples. It was detected at low concentrations in some of the background groundwater samples and the highest groundwater concentrations are observed in MW-52, which is the furthest down-gradient monitoring well.
Silver	Silver was not analyzed on the pond water samples and was not detected in any of the groundwater samples.
Sodium	Sodium was detected in all of the pond water and groundwater samples. The highest concentrations were detected in some of the background samples with the lower concentrations in the pond water samples.
Uranium	Uranium was not analyzed in the pond water samples. It was detected in low concentrations in groundwater both in the up-gradient background wells and in the down-gradient wells with no apparent trend.
Zinc	Zinc was not analyzed in the pond water samples. It was detected in generally low concentrations in the groundwater samples with no obvious trend.



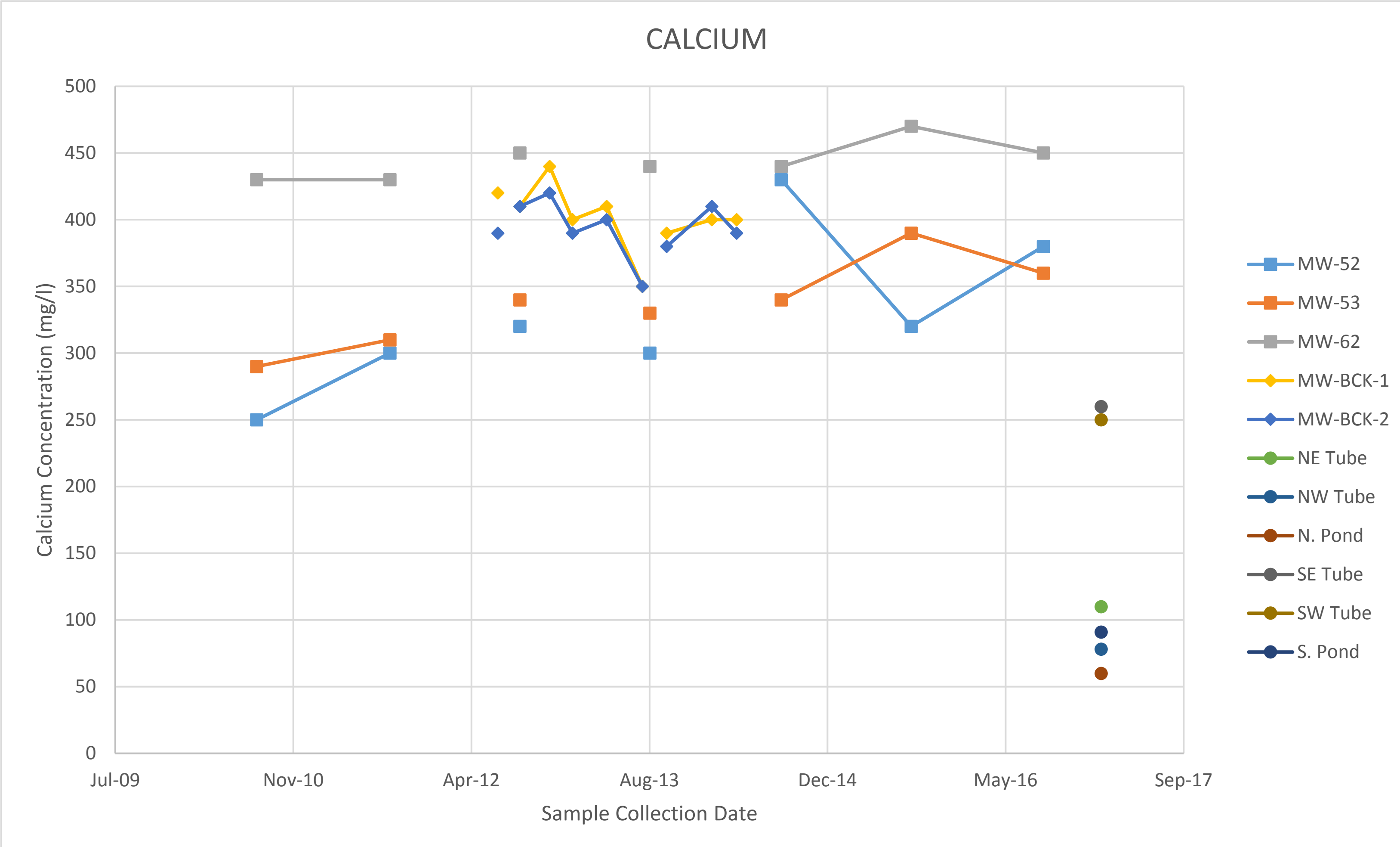
BARIUM
Barium Concentration (mg/l)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Sample Collection Date
MW-52
MW-53
MW-62
MW-BCK-1
MW-BCK-2
NE Tube
NW Tube
N. Pond
SE Tube
SW Tube
S. Pond


CHLORIDE
Chloride Concentration (mg/l)
1400
1200
1000
800
600
400
200
0
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Sample Collection Date
MW-52
MW-53
MW-62
MW-BCK-1
MW-BCK-2
NE Tube
NW Tube
N. Pond
SE Tube
SW Tube
S. Pond


SULFATE
Sulfate Concentration (mg/l)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Sample Collection Date
MW-52
MW-53
MW-62
MW-BCK-1
MW-BCK-2
NE Tube
NW Tube
N. Pond
SE Tube
SW Tube
S. Pond



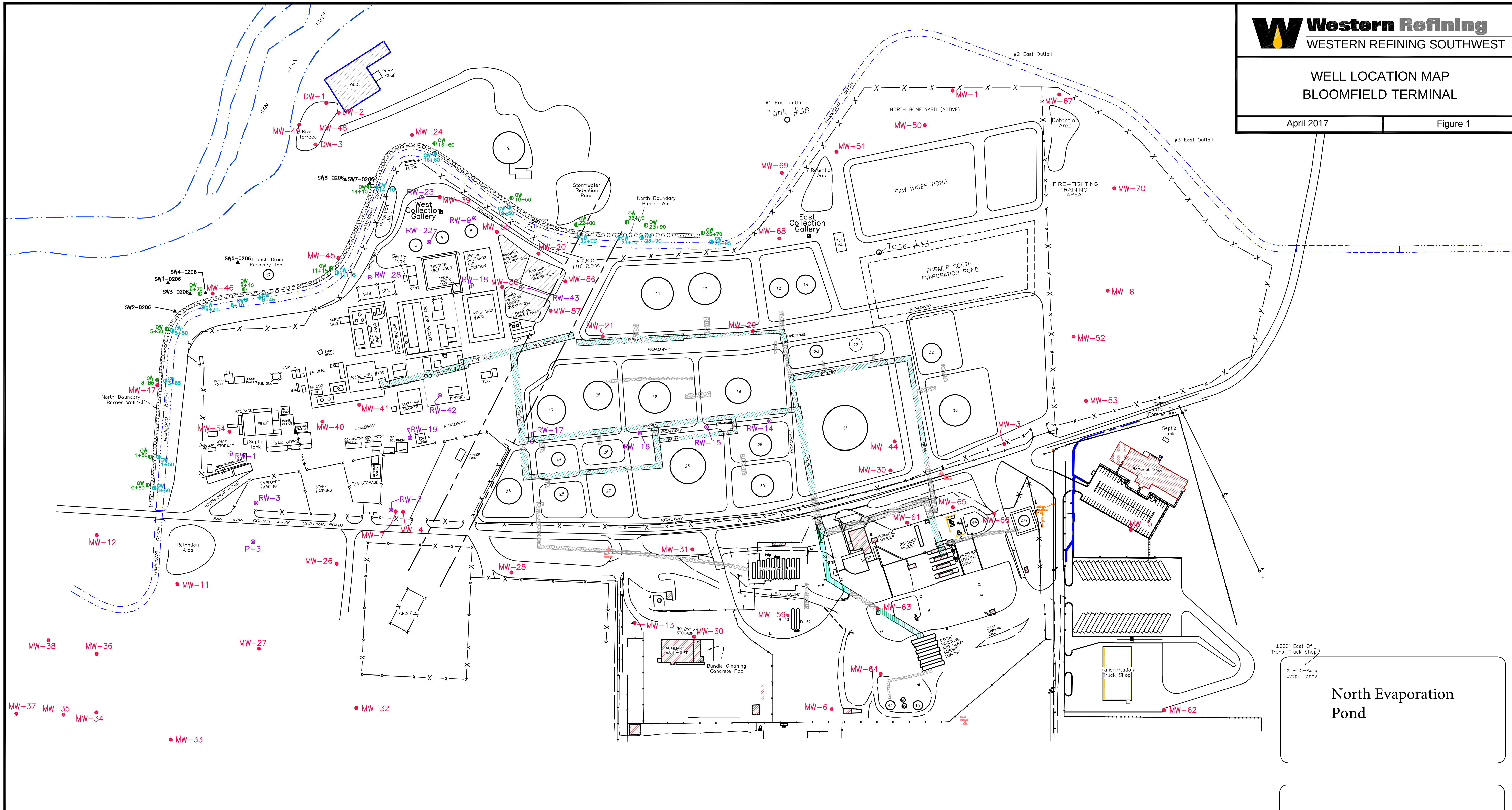
TOTAL DISSOLVED SOLIDS
Total Dissolved Solids Concentration (mg/l)
14000
12000
10000
8000
6000
4000
2000
0
Sep-11
Apr-12
Oct-12
May-13
Nov-13
Jun-14
Dec-14
Jul-15
Jan-16
Aug-16
Mar-17
Sep-17
Sample Collection Date
MW-52
MW-53
MW-62
MW-BCK-1
MW-BCK-2
NE Tube
NW Tube
N. Pond
SE Tube
SW Tube
S. Pond


CALCIUM
Calcium Concentration (mg/l)
500
450
400
350
300
250
200
150
100
50
0
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Sample Collection Date
MW-52
MW-53
MW-62
MW-BCK-1
MW-BCK-2
NE Tube
NW Tube
N. Pond
SE Tube
SW Tube
S. Pond

Western Refining
WESTERN REFINING SOUTHWEST

WELL LOCATION MAP
BLOOMFIELD TERMINAL

April 2017 | Figure 1



LEGEND

MW-1	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
RW-1	RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
OW 1+50	OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
CW 1+50	COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
SW1-0206	SUMP WELL LOCATION AND IDENTIFICATION NUMBER
P-2	PIEZOMETER IDENTIFICATION
	SURFACE WATER DRAINAGE PATTERN
	UNDER GROUND PIPE-WAY
	ABOVE GROUND PIPE-WAY
	SLURRY BARRIER WALL
	FORMER TANK LOCATION

N

0 300
SCALE IN FEET

Aerial Map Source: Google Maps, 2008 DigitalGlobe.

N

0 500
SCALE IN FEET

LEGEND

BK-9 (MW-BCK1) PROPOSED BACKGROUND MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

GAS WELL LOCATION

WESTERN PROPERTY BOUNDARY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:12/09/14 | FILE:WestRef-dB11

FIGURE 2
BACKGROUND MONITORING WELL LOCATIONS
BLOOMFIELD REFINERY

DiSorbo
Environmental Consulting Firm

8501 N. MoPac Expy.
Suite 300
Austin, Texas 78759

Chavez, Carl J, EMNRD

From:	Robinson, Kelly <Kelly.Robinson@wnr.com>
Sent:	Friday, June 23, 2017 3:39 PM
To:	Chavez, Carl J, EMNRD
Cc:	Griswold, Jim, EMNRD; Smith, Cory, EMNRD; Schmaltz, Randy; Bayliss, Randolph, EMNRD
Subject:	RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems
Attachments:	Response to June 1, 2017 email from OCD_Final.pdf

Good Afternoon Sir,

Western has prepared the attached letter report in response to the e-mail received from the New Mexico Oil Conservation Division regarding the Bloomfield Terminal Evaporation Ponds Leak Detection System. A hard copy is being provide to you via certified mail.

If you have any questions or would like to discuss this topic in more details, please do not hesitate to contact either Randy Schmaltz (WNR HSE Manager) at (505) 632-4171 or myself at your convenience.

Thank you for your time, and have a great weekend!

Sincerely,

Kelly R. Robinson
Environmental Supervisor
Western Refining – Logistics
(o) 505-632-4166
(e) Kelly.robinson@wnr.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, June 01, 2017 10:44 AM
To: Robinson, Kelly <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

---

Kelly:

Good morning. The New Mexico Oil Conservation Division (OCD) has completed its review of Western Refining Southwest, Inc.'s (Western) above subject evaporation pond leak detection system proposal or plan.

OCD hereby **approves** with the following conditions:

1) provide a detailed schedule to OCD for approval;
2) include the scientific-industry based derived leakage rate criteria based on the liner material type(s) and dimensions of the evaporation ponds; and

3) include an evaluation, summary and graphs to assess potential impact(s) to groundwater from the evaporation ponds based on historical water quality data from nearby MWs, i.e., MWs- 1, 50, 51 and 67. MW data to be evaluated should consist of inorganic general chemistry, organics, and metals parameters. OCD first became aware of fluids in the LDS around 2008.

Please contact OCD if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Robinson, Kelly [mailto:Kelly.Robinson@wnr.com]
Sent: Tuesday, May 30, 2017 4:26 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Good Afternoon Sir,

As requested by New Mexico Oil Conservation Division ("NMOCD"), Western Refining Southwest, Inc. ("Western") proposes to conduct the following activities in an effort to gather additional supplemental information regarding the Bloomfield Terminal leak detection systems associated with the evaporation ponds:

- Fluids will be extracted from each leak detection tube at both the North and South Evaporation Ponds via vacuum truck or equivalent means. Initially the fluids extraction will be conducted twice per week with the possible adjustment of the frequency based on field observations of the volumes recovered and fluids recovery rates.
- Fluid level measurements will be collected prior to, during (if feasible), and at the cessation of recovery. Fluid recovery volumes will be estimated during each recovery event.
- Within thirty days after conclusion of the final fluids extraction event, a letter report will be submitted to NMOCD summarizing the fluid level measurements and recovery volumes. As possible, conclusions will be provided as to the source of the fluids detected in the LDS.

Western is working to identify the resources needed to accomplish this field effort, and will be prepared to initiate such activities following receipt of approval from NMOCD. If you would prefer to discuss this topic in more detail, please feel free to contact either Mr. Randy Schmaltz (HSE Manager) at 505-632-4171 or myself at your convenience.

Thank you for your time, and I hope you have a good evening!

Sincerely,

Kelly R. Robinson I Environmental Supervisor
Western Refining I 111 County Road 4990 I Bloomfield, NM87413
(o) 505-632-4166 I (c) 505-801-5616 I (e) kelly.robinson@wnr.com

---

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, April 05, 2017 12:49 PM
To: Robinson, Kelly <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

---

Kelly:

Good afternoon. The New Mexico Oil Conservation Division (OCD) has completed its review of the above subject submittal.

OCD observations are:

1) Western indicated that the study was done under static conditions, i.e., no injection into a Class I (NH) disposal well occurred during the period when data was collected. Therefore, Table 1 should not have realized any significant changes in pond levels during the observation period, which is incongruent with Western's calculated percent changes in both pond head elevations during the observation period. When OCD performs relative percent difference calculations of pond head data, it does not derive similar percent differences in pond head elevation as Western. Thus, Western's assertion that significant changes in pond elevations are not reflected in LDS tube elevations as an observation that they are isolated is in question.
2) Western did not submit Table 1 with "mean sea level elevation" units in order to compare head elevations between ponds and associated leak detection tubes. This would allow true evaluation and comparison between pond and LDS tube head data for analysis.
3) Fluids were present in LDS pond tubes before a new primary liner was placed above the existing system. OCD would expect isolation between the new primary pond liner level and LDS tubes; however, the current LDS design appears to be inaccurate due to the most recent primary liner placement. The LDS tubes would be expected to monitor leakage from the liner(s) beneath the new primary liner, and may be grossly ineffective at detecting any new primary liner leakage problems within the monitoring pond system.
4) From Table 2, Acetone has been a regular constituent in effluent injected into the disposal well, which is reflected by the N and S Pond detections 23 and 180 ug/L, respectively. However, the detection limit (DL) used in LDS Tubes was 10 ug/L, which Western uses to illustrate a lack of hydraulic connection. Western should have required a lower DL for Acetone because any presence of it in LDS Tubes would indicate connection, and not isolation.
5) From Table 2, OCD observes that some of the data appears to exhibit isolation; however, the discrepancies between pond and LDS Tubes used in the analysis may be explained by pre-existing leakage from the liner system before the new primary liner was installed on 11/22/2011.

OCD comments are:

1) The refinery was idled in 2009, and OCD allowed the permittee to continue operating under the existing refinery DP.
2) During an OCD inspection associated with DP Renewal, OCD had identified fluids in the N and S Ponds LDS Tubes. However, Western in attempt to address the fluids in the LDS of the ponds installed a primary liner over the existing pond network on 11/22/2011. OCD does not recall reviewing and/or approving this pond construction change.
3) If based on recommendations No. 2 below, Western can show no discharge to groundwater quality has occurred, OCD may continue to allow the current design and monitoring to continue. For example, if the primary liner leaks, the LDS should grossly detect the leak.

OCD recommendations are:

1) Based on Observation No. 5 above, there is the question of whether the LDS liner at the base of the pond design has contained leaking fluids over time?
2) Based on a map of the N and S Pond Areas, OCD notices existing MWs exist. OCD recommends that Western conduct an evaluation of key constituents in Table 2 with past monitoring data in the vicinity of the ponds to determine if any noticeable detections occurred prior to 2008, during and after to assess potential leakage from the current pond system.
3) OCD recommends that Western assess OCD's review above, and propose a "path forward" for OCD to review and approve based on the situation.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Chavez, Carl J, EMNRD
Sent: Friday, March 31, 2017 1:20 PM
To: 'Robinson, Kelly' <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Kelly, et al.:

Good afternoon. The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject submittal and will respond soon.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Robinson, Kelly [mailto:Kelly.Robinson@wnr.com]
Sent: Friday, March 24, 2017 1:54 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Good Afternoon Sir,

Following receipt of the request from the New Mexico Oil Conservation Division (NMOCD) to conduct additional pumping on the leak detection system at the evaporation ponds, Western initiated a more detailed review of past data collected from the evaporation ponds and leak detection system. Prior to initiating any additional field pumping activities as requested by NMOCD, Western would appreciate this opportunity to provide a summary of the information collected over the past year and explain how this data has been used to provide assurance that there does not appear to be any active leaks from the evaporation ponds into the leak detection system.

To supplement the field data collected previously, Western has collected more recent analytical data on the waters in the leak detection system and from the evaporation ponds. The analytes selected for analysis were based on review of previous analytical data of used waters from the ponds prior to injection, and analytes that would provide the opportunity for an anion/cation balance evaluation between the waters in the evaporation ponds and the waters in the leak detection tube. The field data and the analytical results from recent sampling was provided to a third-party consultant for evaluation and interpretation. A letter report summarizing their conclusions of the information provided to them is attached for your review.

In summary, the review of the water level data in the evaporation ponds and associated leak detection systems along with the chemical analysis of the water samples recently collected indicates a lack of hydraulic connection between the ponds and the underlying leak detection system. Due to the size of the footprint of each evaporation pond, the limited water in the leak detection system, and the beneficial considerations of being able to monitor static/stable conditions within the leak detection system (i.e. not actively pumping from the system), Western believes that monitoring the system without actively pumping from the leak detect system provide more value as it pertains to monitoring the integrity of the primary evaporation pond liners. Therefore, Western respectfully requests NMOCD to reconsider requiring activing pumping on the leak detection system.

We appreciate in advance NMOCD's consideration on this topic.
Thank you for your time, and have a great weekend!

Sincerely,

Kelly R. Robinson I Environmental Supervisor
Western Refining I 111 County Road 4990 I Bloomfield, NM87413
(o) 505-632-4166 I (c) 505-801-5616 I (e) kelly.robinson@wnr.com

---

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, January 20, 2017 12:33 PM
To: Robinson, Kelly <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

---

Kelly:

Good afternoon. The New Mexico Oil Conservation Division (OCD) is writing to follow-up on our telephone call on the above subject this morning.

OCD requests a test requiring monitoring of fluid levels in the above subject ponds and Leak Detection Systems (LDSs) with verification of the static groundwater level at the pond location. A shallow water table condition does not appear to be a factor in fluids detected in the LDSs.

In addition, evacuation or pumping of fluids from the North and South Pond LDSs is requested over a 90 day period (or less depending on the results or conditions realized during the test). Fluid levels should be measured before, during, at completion of pumping, and for a reasonable period after cessation of pumping. OCD is aware that a steady-state flow condition may not be achievable, but a periodic pumping or switch actuated pumping system may be appropriate.

A report summarizing the evacuation and monitoring with conclusions on the cause of fluid accumulation in the LDSs and any recommendations based on the above is requested within 30 days of completion of pumping and monitoring.

OCD hereby requests a schedule from Western to complete the above.

Please contact me if you have questions or need to communicate further in this matter. Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Thursday, June 1, 2017 10:44 AM
To:	'Robinson, Kelly'
Cc:	Griswold, Jim, EMNRD; Smith, Cory, EMNRD; Schmaltz, Randy; Bayliss, Randolph, EMNRD
Subject:	RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Kelly:

Good morning. The New Mexico Oil Conservation Division (OCD) has completed its review of Western Refining Southwest, Inc.'s (Western) above subject evaporation pond leak detection system proposal or plan.

OCD hereby **approves** with the following conditions:

1) provide a detailed schedule to OCD for approval;
2) include the scientific-industry based derived leakage rate criteria based on the liner material type(s) and dimensions of the evaporation ponds; and
3) include an evaluation, summary and graphs to assess potential impact(s) to groundwater from the evaporation ponds based on historical water quality data from nearby MWs, i.e., MWs- 1, 50, 51 and 67. MW data to be evaluated should consist of inorganic general chemistry, organics, and metals parameters. OCD first became aware of fluids in the LDS around 2008.

Please contact OCD if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Robinson, Kelly [mailto:Kelly.Robinson@wnr.com]
Sent: Tuesday, May 30, 2017 4:26 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Good Afternoon Sir,

As requested by New Mexico Oil Conservation Division ("NMOCD"), Western Refining Southwest, Inc. ("Western") proposes to conduct the following activities in an effort to gather additional supplemental information regarding the Bloomfield Terminal leak detection systems associated with the evaporation ponds:

- Fluids will be extracted from each leak detection tube at both the North and South Evaporation Ponds via vacuum truck or equivalent means. Initially the fluids extraction will be conducted twice per week with the possible adjustment of the frequency based on field observations of the volumes recovered and fluids recovery rates.
- Fluid level measurements will be collected prior to, during (if feasible), and at the cessation of recovery. Fluid recovery volumes will be estimated during each recovery event.
- Within thirty days after conclusion of the final fluids extraction event, a letter report will be submitted to NMOCD summarizing the fluid level measurements and recovery volumes. As possible, conclusions will be provided as to the source of the fluids detected in the LDS.

Western is working to identify the resources needed to accomplish this field effort, and will be prepared to initiate such activities following receipt of approval from NMOCD. If you would prefer to discuss this topic in more detail, please feel free to contact either Mr. Randy Schmaltz (HSE Manager) at 505-632-4171 or myself at your convenience.

Thank you for your time, and I hope you have a good evening!

Sincerely,

Kelly R. Robinson I Environmental Supervisor
Western Refining I 111 County Road 4990 I Bloomfield, NM87413
(o) 505-632-4166 I (c) 505-801-5616 I (e) kelly.robinson@wnr.com

---

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, April 05, 2017 12:49 PM
To: Robinson, Kelly <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

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Kelly:

Good afternoon. The New Mexico Oil Conservation Division (OCD) has completed its review of the above subject submittal.

OCD observations are:

1) Western indicated that the study was done under static conditions, i.e., no injection into a Class I (NH) disposal well occurred during the period when data was collected. Therefore, Table 1 should not have

realized any significant changes in pond levels during the observation period, which is incongruent with Western's calculated percent changes in both pond head elevations during the observation period. When OCD performs relative percent difference calculations of pond head data, it does not derive similar percent differences in pond head elevation as Western. Thus, Western's assertion that significant changes in pond elevations are not reflected in LDS tube elevations as an observation that they are isolated is in question.

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OCD comments are:

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Thank you.

Mr. Carl J. Chavez, CHMM (#13099)

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Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
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Sent: Friday, March 31, 2017 1:20 PM
To: 'Robinson, Kelly' <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Schmaltz, Randy <Randy.Schmaltz@wnr.com>
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Kelly, et al.:

Good afternoon. The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject submittal and will respond soon.

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In summary, the review of the water level data in the evaporation ponds and associated leak detection systems along with the chemical analysis of the water samples recently collected indicates a lack of hydraulic connection between the ponds and the underlying leak detection system. Due to the size of the footprint of each evaporation pond, the limited water in the leak detection system, and the beneficial considerations of being able to monitor static/stable conditions within the leak detection system (i.e. not actively pumping from the system), Western believes that monitoring the system without actively pumping from the leak detect system provide more value as it pertains to monitoring the integrity of the primary evaporation pond liners. Therefore, Western respectfully requests NMOCD to reconsider requiring activing pumping on the leak detection system.

We appreciate in advance NMOCD's consideration on this topic.
Thank you for your time, and have a great weekend!

Sincerely,

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Western Refining I 111 County Road 4990 I Bloomfield, NM87413
(o) 505-632-4166 I (c) 505-801-5616 I (e) kelly.robinson@wnr.com

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Sent: Friday, January 20, 2017 12:33 PM
To: Robinson, Kelly <Kelly.Robinson@wnr.com>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

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In addition, evacuation or pumping of fluids from the North and South Pond LDSs is requested over a 90 day period (or less depending on the results or conditions realized during the test). Fluid levels should be measured before, during, at completion of pumping, and for a reasonable period after cessation of pumping. OCD is aware that a steady-state flow condition may not be achievable, but a periodic pumping or switch actuated pumping system may be appropriate.

A report summarizing the evacuation and monitoring with conclusions on the cause of fluid accumulation in the LDSs and any recommendations based on the above is requested within 30 days of completion of pumping and monitoring.

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Please contact me if you have questions or need to communicate further in this matter. Thank you.

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, April 5, 2017 12:49 PM
To: 'Robinson, Kelly'
Cc: Griswold, Jim, EMNRD; Smith, Cory, EMNRD; 'Schmaltz, Randy'; Bayliss, Randolph, EMNRD
Subject: RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

Kelly:

Good afternoon. The New Mexico Oil Conservation Division (OCD) has completed its review of the above subject submittal.

OCD observations are:

1) Western indicated that the study was done under static conditions, i.e., no injection into a Class I (NH) disposal well occurred during the period when data was collected. Therefore, Table 1 should not have realized any significant changes in pond levels during the observation period, which is incongruent with Western's calculated percent changes in both pond head elevations during the observation period. When OCD performs relative percent difference calculations of pond head data, it does not derive similar percent differences in pond head elevation as Western. Thus, Western's assertion that significant changes in pond elevations are not reflected in LDS tube elevations as an observation that they are isolated is in question.
2) Western did not submit Table 1 with "mean sea level elevation" units in order to compare head elevations between ponds and associated leak detection tubes. This would allow true evaluation and comparison between pond and LDS tube head data for analysis.
3) Fluids were present in LDS pond tubes before a new primary liner was placed above the existing system. OCD would expect isolation between the new primary pond liner level and LDS tubes; however, the current LDS design appears to be inaccurate due to the most recent primary liner placement. The LDS tubes would be expected to monitor leakage from the liner(s) beneath the new primary liner, and may be grossly ineffective at detecting any new primary liner leakage problems within the monitoring pond system.
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Sent:	Friday, March 24, 2017 1:54 PM
To:	Chavez, Carl J, EMNRD
Cc:	Griswold, Jim, EMNRD; Smith, Cory, EMNRD; Schmaltz, Randy
Subject:	RE: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems
Attachments:	Western Bloomfield Evaporation Ponds Evaluation update.pdf

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Subject: Bloomfield Terminal (GW-001) Evaporation Pond(s) Fluid Levels in North and South Pond Leak Detection Systems

This email was sent by an external sender. Please use caution when opening attachments, clicking web links, or replying until you have verified this email sender.

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DiSorbo
Environmental Consulting Firm
8501 North Mopac Expwy | Suite 300 | Austin, TX 78759
512.693.4190 (P) | 512.279.3118 (F) | www.disorboconsult.com

March 21, 2017

Mr. James R. Schmaltz
Health, Safety, Environmental, and Regulatory Director
Western Refining Southwest, Inc., Bloomfield Terminal
111 County Road 4990
Bloomfield, NM 87413

RE: Evaluation of Evaporation Pond Liners, Western Refining Southwest, Inc. Bloomfield Terminal

Dear Mr. Schmaltz:

DiSorbo Consulting, LLC, ("DiSorbo") has completed a review of fluid level measurements and chemical analyses that were collected at the North and South Evaporation Ponds at the Bloomfield Terminal. This review focused on determining the effectiveness of the pond liners in retaining fluids placed in the evaporation ponds.

Water level measurements collected at the North and South Ponds at the Western Bloomfield Terminal were examined to determine if the newer pond liners are leaking. Each pond was originally constructed with 4-inch schedule 80 PVC perforated pipes located in ¾-inch gravel packs underlying the ponds to act as leak detection systems. There are two stand pipes (east and west) for each pond connecting the leak detection systems to the surface for monitoring. As-built construction drawings for the ponds are not available so water level measurements are based on a common physical point of reference and not a surveyed elevation. The attached figure is a simplified cross section for the South Pond. The North Pond has a similar construction.

Starting in March 2016, Western increased their monitoring efforts to also include water level measurements in the ponds, in addition to the leak detection stand pipes as shown in Table 1. Measurements collected in the ponds include the depth to bottom of the ponds and depth to top of the water level. These measurements are then converted into depth of water columns in the pond. [Example: depth to bottom of pond is 7.58 ft. from ground level and depth to water surface in the pond is 4.50 ft. from ground level. Therefore, the depth of water column in the pond during this measurement is 7.58-4.50=3.08 ft.]. Measurements collected in the stand pipes follow the same procedure; depth to bottom of the stand pipe and depth to top of water level in the stand pipes. These measurements are also converted into depth of water columns.

In an effort to determine whether the primary pond liners most-recently installed at both ponds are leaking, the depth of water columns in the ponds are compared to the depths of water columns in the stand pipes. With the exceptions of March and May 2016, water level measurements have been collected at least twice a month from the ponds and stand pipes. To assess the changes in water levels measured in the ponds vs. the associated stand pipes, the greatest percent change in the water levels that occurred during each month was calculated. The tables below show the greatest monthly changes in heights of water columns in both ponds compared to the greatest monthly changes in depths of water columns in the east and west stand pipes for each pond.

South Pond			
Date of Measurements	**Greatest Monthly Water Column Change in Pond**	**Greatest Monthly Water Column Change in West Stand Pipe**	**Greatest Monthly Water Column Change in East Stand Pipe**
March 2016	*	0.0%	3.8%
April	10.8%	0.3%	0.4%

May	*	*	*
June	21.2%	0.3%	0.8%
July	9.7%	0.0%	0.8%
August	7.5%	0.0%	0.8%
Sept.	6.7%	0.3%	1.6%
Oct.	3.5%	0.3%	0.8%
Nov.	9.1%	0.3%	1.2%
Dec.	10.8%	0.3%	0.4%
Jan. 2017	11.9%	0.3%	0.4%

* Only one measurement was made.

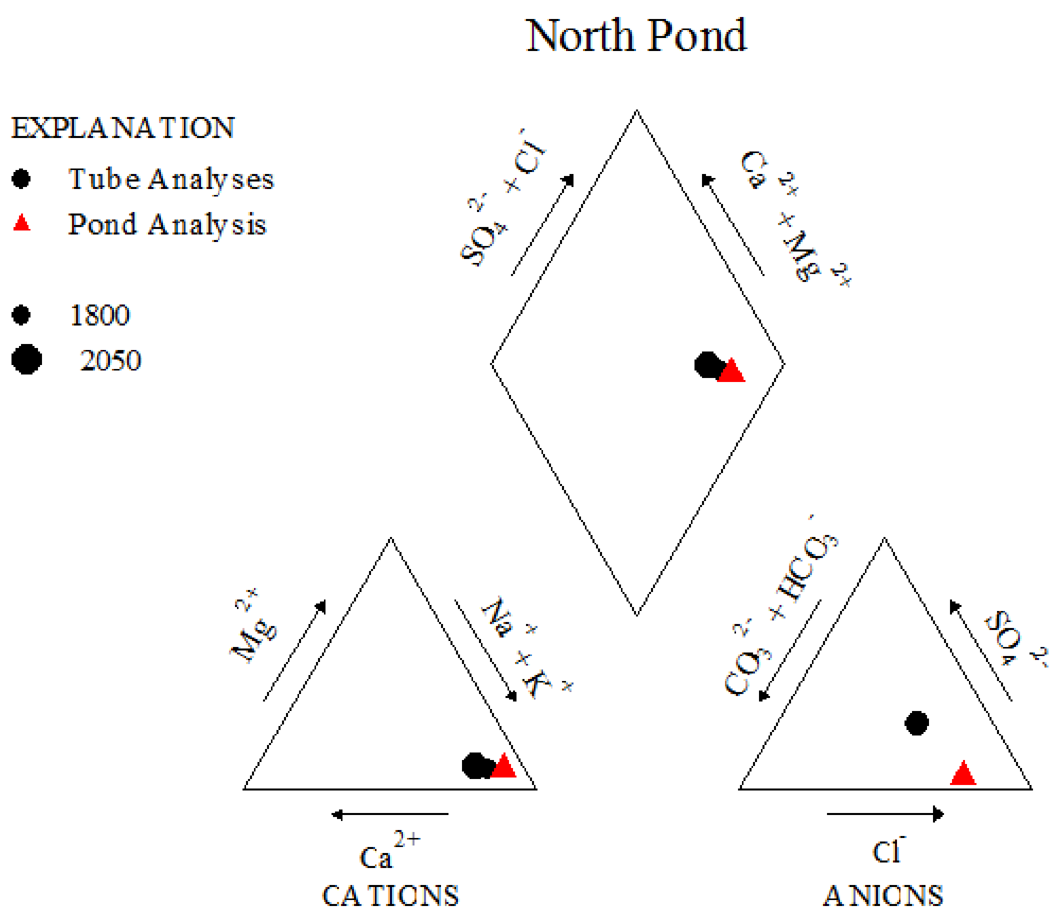
North Pond			
Date of Measurements	Greatest Monthly Water Column Change in Pond	Greatest Monthly Water Column Change in West Stand Pipe	Greatest Monthly Water Column Change in East Stand Pipe
March 2016	*	2.3%	4.7%
April	25.0%	0.9%	2.9%
May	*	*	*
June	27.3%	0.0%	3.1%
July	20.0%	0.9%	2.5%
August	7.7%	0.0%	0.7%
Sept.	16.7%	1.4%	4.9%
Oct.	37.5%	0.9%	1.9%
Nov.	19.4%	1.3%	1.1%
Dec.	0.0%	0.4%	0.7%
Jan. 2017	22.9%	0.9%	3.2%

* Only one measurement was made.

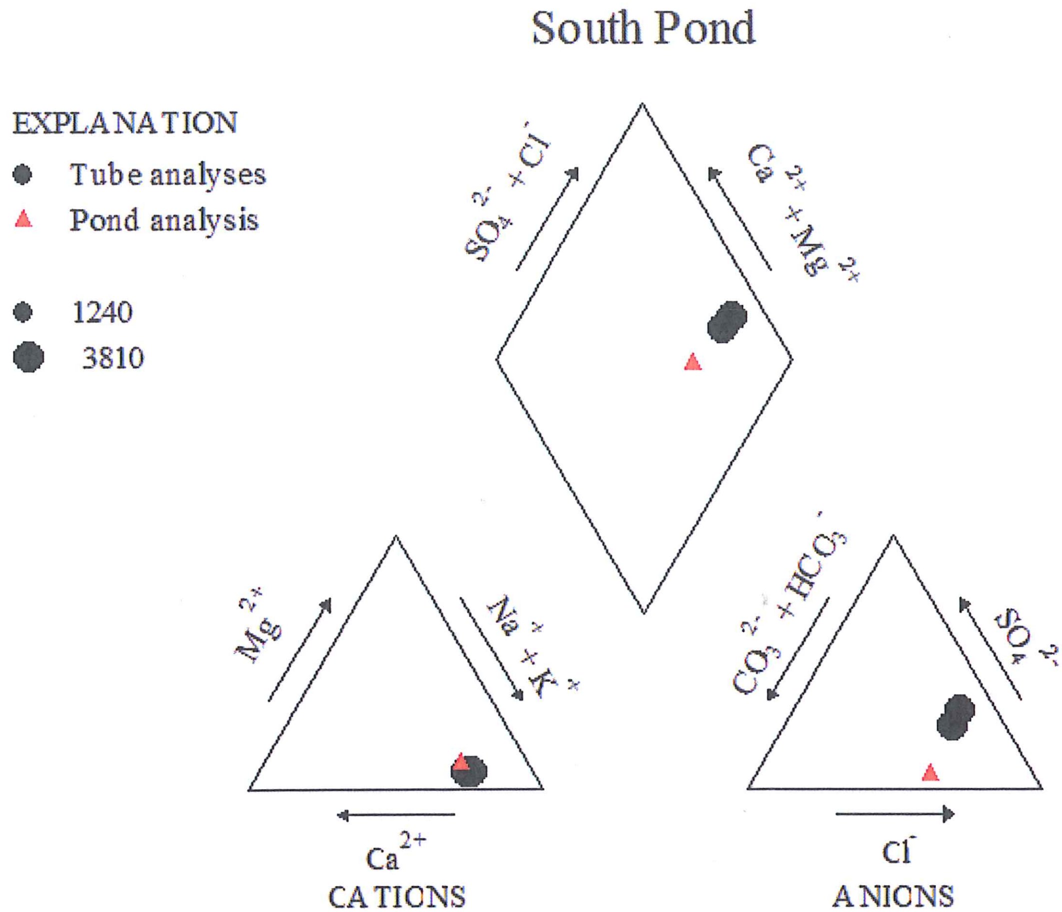
As shown, the greatest monthly change in water levels in the South Pond is between 3.5% and 21.2% while the greatest monthly changes in water levels in the stand pipes are between 0% and 0.3% (west stand pipe) and 0.4% and 3.8% (east stand pipe). The greatest change in water levels in the North Pond is between 0% and 37.5% while the greatest change in water levels in the stand pipes are between 0% and 2.3% (west stand pipe) and 0.7% and 4.9% (east stand pipe). The small changes in water levels observed in the stand pipes compared to the much greater changes of water levels in the ponds suggests there is not a direct hydraulic connection between the water in the ponds and the leak detection systems.

A review of the chemical analyses from water samples collected at the evaporation ponds was completed. The purpose of the review was to determine if there is chemical evidence to show a direct hydraulic connection between the contents of the ponds and the fluids present in the leak detection tubes. Water samples were collected from each of the leak detection tubes at both the North and South Ponds, as well as from water within each pond. The results are provided in Table 2 and the laboratory reports are attached. The analyses included metals, anions, total dissolved solids, specific conductance, pH, alkalinity, and acetone.

The analytical results for the water sample collected from within the North Pond as compared to the two samples collected from the associated leak detection tubes (NE tube and NW tube) indicate significantly higher concentrations of chloride in the pond vs. the leak detection tubes. Similarly, potassium and sodium are significantly higher in the pond sample, while sulfate is notably lower in the North Pond water sample. To better understand the difference in the water quality, the analyses are presented on a piper plot. The two samples collected from the leak detection tubes are represented by black dots and the water sample collected from the North Pond is represented with a red triangle. While the two samples collected from the different detection tubes are essentially plotted on top of each other due to very similar analyses, the sample from the pond water is plotted well away from the detection tube samples on the anion plot. This reflects the difference in water quality in the pond vs. that observed in the underlying leak detection system.



The analytical results for the water sample collected from within the South Pond as compared to the two samples collected from the leak detection tubes (SE tube and SW tube) indicate significantly lower concentrations of nearly all analytes in the South Pond water sample vs. the leak detection tube samples. The one exception being acetone, which was only detected in the pond water sample. The significant difference in water quality is reflected in the total dissolved solids concentrations, with concentrations of 3,810 mg/l and 3,450 mg/l in the SE tube and SW tube samples, respectively, compared to a much lower 1,240 mg/l in the South Pond sample. The analyses are presented below on a piper plot. While the two samples collected from the different detection tubes are essentially plotted on top of each other due to very similar analyses, the sample from the pond water is plotted away from the detection tube samples on the anion plot and the “diamond” plot. This reflects the difference in water quality in the pond vs. that observed in the underlying leak detection system. The relative size of the plotted symbols also reflects the difference in total dissolved solids concentration.



In summary, a review of water levels measured in the evaporation ponds and their associated leak detection systems and chemical analyses of water samples collected from the ponds and the leak detection systems indicates a lack of hydraulic connection between the ponds and the underlying leak detection system.

Sincerely,
DiSorbo Consulting, LLC

Scott Crouch, P.G.

Mark Fuller, P.E.

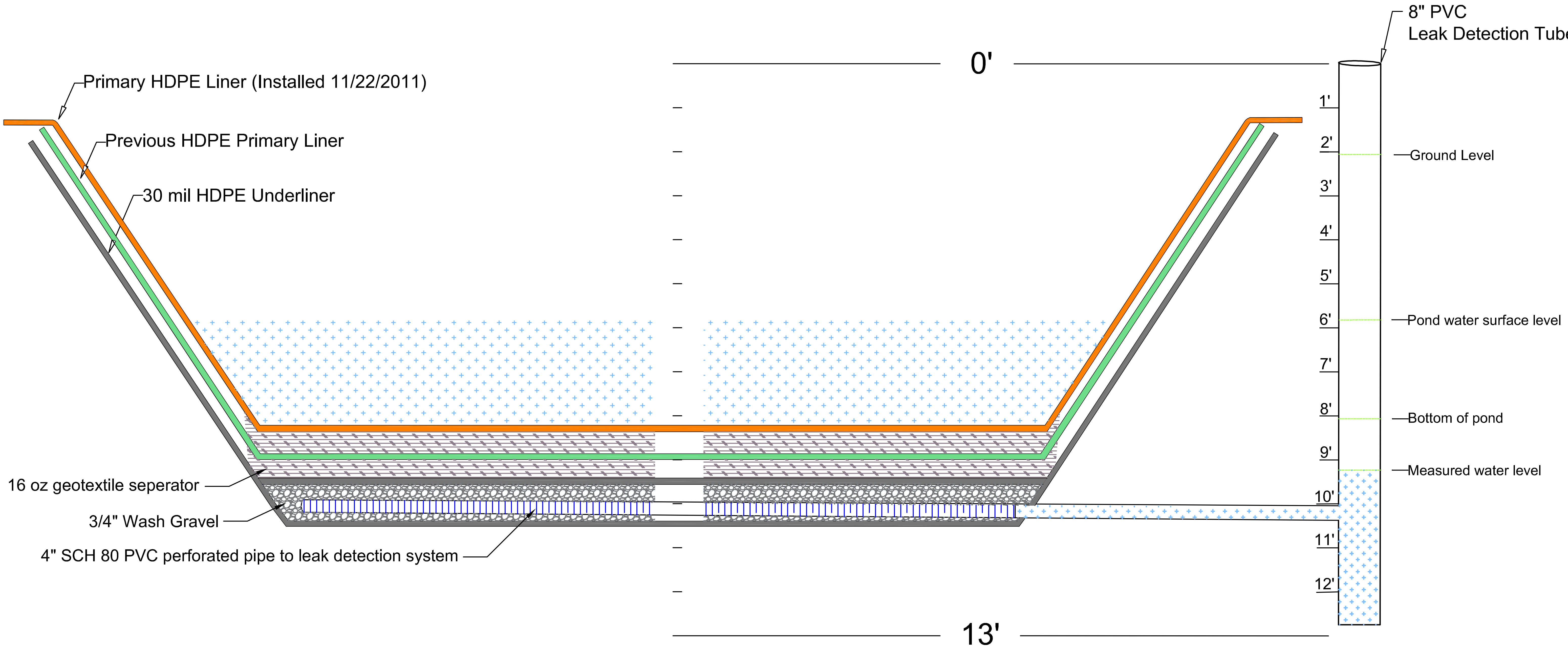
Table 1 - Water Level Measurements

Date	South Pond						North Pond					
	Water Depth in Pond (ft)	Leak Detection Tube Water Column Height (West) (ft)	Leak Detection Tube Water Column Height (East) (ft)	Greatest Monthly Water Level Change in Pond	Greatest Monthly Water Level Change in West Tube Water Column	Greatest Monthly Water Level Change in East Tube Water Column	Water Depth in Pond (ft)	Leak Detection Tube Water Column Height (West) (ft)	Leak Detection Tube Water Column Height (East) (ft)	Greatest Monthly Water Level Change in Pond	Greatest Monthly Water Level Change in West Tube Water Column	Greatest Monthly Water Level Change in East Tube Water Column
03/14/16		3.7	2.27		0.0%	3.81%		2.12	2.62		2.3%	4.7%
03/30/16	3.1	3.7	2.36				0.75	2.17	2.75			
04/07/16	2.8	3.7	2.34	10.8%	0.3%	0.43%	1.00	2.19	2.77	25.0%	0.9%	2.9%
04/20/16	NM	3.71	2.34				NM	2.18	2.77			
04/27/16	3.1	3.7	2.35				0.75	2.17	2.69			
05/18/16	2.8	3.71	2.37	0.0%	0.0%	0.00%	1.00	2.21	2.75	0.0%	0.0%	0.0%
06/01/16	2.8	3.71	2.38	21.2%	0.3%	0.83%	0.67	2.2	2.73	27.3%	0.0%	3.1%
06/15/16	2.2	3.71	2.38				0.92	2.2	2.74			
06/22/16	2.2	3.72	2.4				0.75	2.2	2.72			
07/07/16	2.6	3.72	2.4	9.7%	0.0%	0.83%	0.83	2.22	2.77	20.0%	0.9%	2.5%
07/21/16	2.3	3.72	2.38				0.67	2.2	2.7			
08/10/16	3.1	3.72	2.39	7.5%	0.0%	0.83%	1.00	2.21	2.76	7.7%	0.0%	0.7%
08/24/16	3.3	3.72	2.41				1.08	2.21	2.74			
09/08/16	3.5	3.72	2.44	6.7%	0.3%	1.64%	1.00	2.22	2.83	16.7%	1.4%	4.9%
09/21/16	3.8	3.71	2.4				0.83	2.19	2.69			
10/04/16	3.8	3.7	2.43	3.5%	0.3%	0.82%	0.83	2.18	2.68	37.5%	0.9%	1.9%
10/19/16	3.7	3.69	2.41				1.33	2.2	2.73			
11/02/16	2.8	3.69	2.43	9.1%	0.3%	1.23%	2.42	2.22	2.82	19.4%	1.3%	1.1%
11/09/16	2.5	3.69	2.4				2.92	2.25	2.83			
11/22/16	2.7	3.68	2.4				3.00	2.24	2.8			
12/07/16	2.8	3.67	2.4	10.8%	0.3%	0.41%	3.00	2.23	2.71	0.0%	0.4%	0.7%
12/21/16	3.1	3.68	2.41				3.00	2.24	2.73			
01/04/17	3.5	3.67	2.4	11.9%	0.3%	0.41%	3.08	2.25	2.73	22.9%	0.9%	3.2%
01/18/17	3.1	3.68	2.41				4.00	2.27	2.82			

NM - not measured

Table 2 - Chemical Analyses

	North Pond			South Pond		
EPA Method 200.7: Metals (mg/L)	NE Tube	NW Tube	Pond	SE Tube	SW Tube	Pond
Barium	0.070	0.075	1.7	0.05	0.061	0.31
Calcium	110	78	60	260	250	91
Magnesium	39	32	39	52	50	26
Potassium	14	15	50	20	20	7.1
Sodium	580	570	730	1000	930	320
EPA Method 300.0: Anions (mg/L)						
Bromide	1.9	1.5	4.7	4.5	5.3	1.8
Chloride	520	480	920	1300	1100	360
Sulfate	390	370	85	960	650	49
SM2510B: Specific Conductance (umhos/cm)						
Conductivity	3100	2800	3600	5800	5300	2000
SM2540C MOD: TDS						
TDS	1950	1800	2050	3810	3450	1240
SM4500-+B: pH						
pH	6.93	7.04	8.08	7.04	6.95	7.63
SM2320B: Alkalinity (mg/L CaCO3)						
Bicarbonate (As CaCO3)	487.1	420.5	420.8	492.8	588.8	361
Carbonate (As CaCO3)	< 2.000	< 2.000	< 2.000	<2.00	<2.00	<2.000
Total Alkalinity (as CaCO3)	487.1	420.5	420.8	492.8	588.8	361
EPA Method 8260B: Volatiles (ug/L)						
Acetone	< 10	< 10	23	<20	<20	180



Drawing not to scale

Western Refining

South Pond	West Detection Tube

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 08, 2017

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Evaporation Pond Leak Detection OrderNo.: 1702157

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 2/3/2017 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** NE Tube
Project: Evaporation Pond Leak Detection **Collection Date:** 2/2/2017 2:10:00 PM
Lab ID: 1702157-001 **Matrix:** AQUEOUS **Received Date:** 2/3/2017 8:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGT**
Chloride	520	50	*	mg/L	100	2/3/2017 4:09:52 PM	R40520
Bromide	1.9	1.0		mg/L	10	2/3/2017 3:57:28 PM	R40520
Sulfate	390	5.0	*	mg/L	10	2/3/2017 3:57:28 PM	R40520
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	3100	1.0		µmhos/cm	1	2/6/2017 11:56:42 AM	R40556
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	487.1	20.00		mg/L CaCO3	1	2/6/2017 11:56:42 AM	R40556
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/6/2017 11:56:42 AM	R40556
Total Alkalinity (as CaCO3)	487.1	20.00		mg/L CaCO3	1	2/6/2017 11:56:42 AM	R40556
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	1950	100	*D	mg/L	1	2/6/2017 6:08:00 PM	30048
SM4500-H+B: PH						Analyst:	**JRR**
pH	6.93	1.68	H	pH units	1	2/6/2017 11:56:42 AM	R40556
EPA METHOD 200.7: METALS						Analyst:	**MED**
Barium	0.070	0.0020		mg/L	1	2/7/2017 12:36:01 PM	30073
Calcium	110	5.0		mg/L	5	2/7/2017 11:17:49 AM	30073
Magnesium	39	1.0		mg/L	1	2/7/2017 11:16:06 AM	30073
Potassium	14	1.0		mg/L	1	2/7/2017 11:16:06 AM	30073
Sodium	580	20		mg/L	20	2/7/2017 11:45:53 AM	30073
EPA METHOD 8260B: VOLATILES						Analyst:	**DJF**
Acetone	ND	10		µg/L	1	2/3/2017 8:38:58 PM	W40507
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	1	2/3/2017 8:38:58 PM	W40507
Surr: 4-Bromofluorobenzene	97.2	70-130		%Rec	1	2/3/2017 8:38:58 PM	W40507
Surr: Dibromofluoromethane	100	70-130		%Rec	1	2/3/2017 8:38:58 PM	W40507
Surr: Toluene-d8	111	70-130		%Rec	1	2/3/2017 8:38:58 PM	W40507

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** NW Tube
Project: Evaporation Pond Leak Detection **Collection Date:** 2/2/2017 3:10:00 PM
Lab ID: 1702157-002 **Matrix:** AQUEOUS **Received Date:** 2/3/2017 8:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: **LGT**
Chloride	480	50	*	mg/L	100	2/3/2017 4:34:42 PM	R40520
Bromide	1.5	1.0		mg/L	10	2/3/2017 4:22:17 PM	R40520
Sulfate	370	5.0	*	mg/L	10	2/3/2017 4:22:17 PM	R40520
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**
Conductivity	2800	1.0		µmhos/cm	1	2/6/2017 12:17:42 PM	R40556
SM2320B: ALKALINITY							Analyst: **JRR**
Bicarbonate (As CaCO3)	420.5	20.00		mg/L CaCO3	1	2/6/2017 12:17:42 PM	R40556
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/6/2017 12:17:42 PM	R40556
Total Alkalinity (as CaCO3)	420.5	20.00		mg/L CaCO3	1	2/6/2017 12:17:42 PM	R40556
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**
Total Dissolved Solids	1800	100	*D	mg/L	1	2/6/2017 6:08:00 PM	30048
SM4500-H+B: PH							Analyst: **JRR**
pH	7.04	1.68	H	pH units	1	2/6/2017 12:17:42 PM	R40556
EPA METHOD 200.7: METALS							Analyst: **MED**
Barium	0.075	0.0020		mg/L	1	2/7/2017 1:15:11 PM	30073
Calcium	78	1.0		mg/L	1	2/7/2017 11:19:37 AM	30073
Magnesium	32	1.0		mg/L	1	2/7/2017 11:19:37 AM	30073
Potassium	15	1.0		mg/L	1	2/7/2017 11:19:37 AM	30073
Sodium	570	20		mg/L	20	2/7/2017 11:47:38 AM	30073
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**
Acetone	ND	10		µg/L	1	2/3/2017 9:07:43 PM	W40507
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%Rec	1	2/3/2017 9:07:43 PM	W40507
Surr: 4-Bromofluorobenzene	95.9	70-130		%Rec	1	2/3/2017 9:07:43 PM	W40507
Surr: Dibromofluoromethane	101	70-130		%Rec	1	2/3/2017 9:07:43 PM	W40507
Surr: Toluene-d8	112	70-130		%Rec	1	2/3/2017 9:07:43 PM	W40507

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** North Pond
Project: Evaporation Pond Leak Detection **Collection Date:** 2/2/2017 3:20:00 PM
Lab ID: 1702157-003 **Matrix:** AQUEOUS **Received Date:** 2/3/2017 8:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGT**
Chloride	920	50	*	mg/L	100	2/3/2017 4:59:31 PM	R40520
Bromide	4.7	1.0		mg/L	10	2/3/2017 4:47:06 PM	R40520
Sulfate	85	5.0		mg/L	10	2/3/2017 4:47:06 PM	R40520
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	3600	1.0		µmhos/cm	1	2/6/2017 12:36:44 PM	R40556
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	420.8	20.00		mg/L CaCO3	1	2/6/2017 12:36:44 PM	R40556
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/6/2017 12:36:44 PM	R40556
Total Alkalinity (as CaCO3)	420.8	20.00		mg/L CaCO3	1	2/6/2017 12:36:44 PM	R40556
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	2050	100	*D	mg/L	1	2/6/2017 6:08:00 PM	30048
SM4500-H+B: PH						Analyst:	**JRR**
pH	8.08	1.68	H	pH units	1	2/6/2017 12:36:44 PM	R40556
EPA METHOD 200.7: METALS						Analyst:	**MED**
Barium	1.7	0.010		mg/L	5	2/7/2017 12:41:24 PM	30073
Calcium	60	1.0		mg/L	1	2/7/2017 11:23:04 AM	30073
Magnesium	39	1.0		mg/L	1	2/7/2017 11:23:04 AM	30073
Potassium	50	1.0		mg/L	1	2/7/2017 11:23:04 AM	30073
Sodium	730	20		mg/L	20	2/7/2017 11:49:35 AM	30073
EPA METHOD 8260B: VOLATILES						Analyst:	**DJF**
Acetone	23	10		µg/L	1	2/3/2017 9:36:22 PM	W40507
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	2/3/2017 9:36:22 PM	W40507
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	2/3/2017 9:36:22 PM	W40507
Surr: Dibromofluoromethane	103	70-130		%Rec	1	2/3/2017 9:36:22 PM	W40507
Surr: Toluene-d8	110	70-130		%Rec	1	2/3/2017 9:36:22 PM	W40507

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB-30073**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**	
Client ID: **PBW**	Batch ID: **30073**	RunNo: **40542**	
Prep Date: **2/6/2017**	Analysis Date: **2/7/2017**	SeqNo: **1270894**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID **LCS-30073**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**	
Client ID: **LCSW**	Batch ID: **30073**	RunNo: **40542**	
Prep Date: **2/6/2017**	Analysis Date: **2/7/2017**	SeqNo: **1270895**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	53	1.0	50.00	0	105	85	115			
Magnesium	52	1.0	50.00	0	104	85	115			
Potassium	51	1.0	50.00	0	102	85	115			
Sodium	51	1.0	50.00	0	101	85	115			

Sample ID **LCSLL-30073**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**	
Client ID: **BatchQC**	Batch ID: **30073**	RunNo: **40542**	
Prep Date: **2/6/2017**	Analysis Date: **2/7/2017**	SeqNo: **1270896**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0	0.5000	0	113	50	150			
Magnesium	ND	1.0	0.5000	0	109	50	150			
Potassium	ND	1.0	0.5000	0	108	50	150			
Sodium	ND	1.0	0.5000	0	105	50	150			

Sample ID **MB-30073**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**	
Client ID: **PBW**	Batch ID: **30073**	RunNo: **40542**	
Prep Date: **2/6/2017**	Analysis Date: **2/7/2017**	SeqNo: **1270972**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								

Sample ID **LCS-30073**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**	
Client ID: **LCSW**	Batch ID: **30073**	RunNo: **40542**	
Prep Date: **2/6/2017**	Analysis Date: **2/7/2017**	SeqNo: **1270973**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	98.3	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#: **1702157**

Hall Environmental Analysis Laboratory, Inc.

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **LCSLL-30073** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**

Client ID: **BatchQC** Batch ID: **30073** RunNo: **40542**

Prep Date: **2/6/2017** Analysis Date: **2/7/2017** SeqNo: **1270974** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0021	0.0020	0.002000	0	104	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#: **1702157**

Hall Environmental Analysis Laboratory, Inc.

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R40520** RunNo: **40520**

Prep Date: Analysis Date: **2/3/2017** SeqNo: **1269770** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Bromide	ND	0.10								
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R40520** RunNo: **40520**

Prep Date: Analysis Date: **2/3/2017** SeqNo: **1269772** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	97.0	90	110			
Bromide	2.5	0.10	2.500	0	98.8	90	110			
Sulfate	9.7	0.50	10.00	0	97.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **rb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **PBW** Batch ID: **W40507** RunNo: **40507**

Prep Date: Analysis Date: **2/3/2017** SeqNo: **1269582** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetone	ND	10								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.0	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	11		10.00		107	70	130			

Sample ID **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **W40507** RunNo: **40507**

Prep Date: Analysis Date: **2/3/2017** SeqNo: **1269583** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.1	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.6	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.4	70	130			
Surr: Toluene-d8	11		10.00		106	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID	1702157-003b dup	SampType:	dup	TestCode:	SM2510B: Specific Conductance					
Client ID:	North Pond	Batch ID:	R40556	RunNo:	40556					
Prep Date:		Analysis Date:	2/6/2017	SeqNo:	1270837	Units:	µmhos/cm			
Analyte	**Result**	**PQL**	**SPK value**	**SPK Ref Val**	**%REC**	**LowLimit**	**HighLimit**	**%RPD**	**RPDLimit**	**Qual**
Conductivity	3600	1.0						0.361	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID	1702157-003b dup	SampType:	dup	TestCode:	SM4500-H+B: pH		
Client ID:	North Pond	Batch ID:	R40556	RunNo:	40556		
Prep Date:		Analysis Date:	2/6/2017	SeqNo:	1270851	Units:	pH units

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.10	1.68								H

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **mb-1** SampType: **mblk** TestCode: **SM2320B: Alkalinity**

Client ID: **PBW** Batch ID: **R40556** RunNo: **40556**

Prep Date: Analysis Date: **2/6/2017** SeqNo: **1270808** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1** SampType: **lcs** TestCode: **SM2320B: Alkalinity**

Client ID: **LCSW** Batch ID: **R40556** RunNo: **40556**

Prep Date: Analysis Date: **2/6/2017** SeqNo: **1270809** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.44	20.00	80.00	0	98.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702157**

08-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB-30048** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **30048** RunNo: **40540**

Prep Date: **2/3/2017** Analysis Date: **2/6/2017** SeqNo: **1270153** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-30048** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **30048** RunNo: **40540**

Prep Date: **2/3/2017** Analysis Date: **2/6/2017** SeqNo: **1270154** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Western Refining Southw** Work Order Number: **1702157** RcptNo: **1**

Received by/date: 02/03/17

Logged By: **Ashley Gallegos** **2/3/2017 8:35:00 AM**

Completed By: **Ashley Gallegos** **2/3/2017 8:59:53 AM**

Reviewed By: JO 02/03/17

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 3
(<2 or >12 unless noted)
Adjusted? NO
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good	Yes			

Chain-of-Custody Record

Client: Western Refining

Kelly Robinson

Mailing Address: 111 CR 4990

Bloomfield, NM

Phone #:

email or Fax#:

QA/QC Package:

☑ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other ____________

☐ EDD (Type) ____________

Turn-Around Time:

☐ Standard ☒ Rush ASAP

Project Name: Evaporation Pond Leak Detection

Project #:

Project Manager: Kelly Robinson

Sampler: Michael A Wicker

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1702157	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		See Attached			Air Bubbles (Y or N)
2-2-17	1410	AQ	NE Tube	6	Various	-001													X			
↓	1510	↓	NW Tube	↓	↓	-002													X			
↓	1520	↓	North Pond	↓	↓	-003													X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
2-2-17	1628	[signature]	[signature]	2/2/17	1628
2/2/17	1811	[signature]	[signature]	02/03/17	0835

Remarks:

P.O. 12619031-2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Anne Thorne

From: Christine Walters
Sent: Thursday, February 02, 2017 9:16 PM
To: Anne Thorne; Andy Freeman
Subject: LT water sample

This is the list of analysis for the LT sample that I sent today. They are requesting results ASAP.

Sodium,
Potassium
Magnesium
Chloride
Calcium
Carbonate
Bicarbonate
Sulfate
Total Alkalinity
TDS
pH
Conductivity

Acetone
Barium
Bromide

Christine Walters
Project Manager
Hall Environmental Analysis Laboratory
cmw@hallenvironmental.com
(505) 320-3183

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 10, 2017

Kelly Robinson
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4135
FAX (505) 632-3911

RE: Evaporation Pond Leak Detection OrderNo.: 1702279

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 3 sample(s) on 2/7/2017 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** South Pond
Project: Evaporation Pond Leak Detection **Collection Date:** 2/6/2017 11:00:00 AM
Lab ID: 1702279-001 **Matrix:** AQUEOUS **Received Date:** 2/7/2017 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Chloride	360	25	*	mg/L	50	2/8/2017 7:20:17 PM	R40613
Bromide	1.8	0.50		mg/L	5	2/7/2017 1:14:02 PM	R40573
Sulfate	49	2.5		mg/L	5	2/7/2017 1:14:02 PM	R40573
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **JRR**	
Conductivity	2000	1.0		µmhos/cm	1	2/8/2017 2:18:46 PM	R40606
SM2320B: ALKALINITY						Analyst: **JRR**	
Bicarbonate (As CaCO3)	361.0	20.00		mg/L CaCO3	1	2/8/2017 2:18:46 PM	R40606
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/8/2017 2:18:46 PM	R40606
Total Alkalinity (as CaCO3)	361.0	20.00		mg/L CaCO3	1	2/8/2017 2:18:46 PM	R40606
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1240	40.0	*D	mg/L	1	2/8/2017 5:22:00 PM	30086
SM4500-H+B: PH						Analyst: **JRR**	
pH	7.63	1.68	H	pH units	1	2/8/2017 2:18:46 PM	R40606
EPA METHOD 200.7: TOTAL METALS						Analyst: **MED**	
Barium	0.31	0.0020		mg/L	1	2/9/2017 10:44:33 AM	30125
Calcium	91	1.0		mg/L	1	2/9/2017 10:44:33 AM	30125
Magnesium	26	1.0		mg/L	1	2/9/2017 9:30:54 AM	30125
Potassium	7.1	1.0		mg/L	1	2/9/2017 9:30:54 AM	30125
Sodium	320	5.0		mg/L	5	2/9/2017 9:32:44 AM	30125
EPA METHOD 8260B: VOLATILES						Analyst: **BCN**	
Acetone	180	20	D	µg/L	2	2/7/2017 2:51:00 PM	R40557
Surr: 1,2-Dichloroethane-d4	104	70-130	D	%Rec	2	2/7/2017 2:51:00 PM	R40557
Surr: 4-Bromofluorobenzene	105	70-130	D	%Rec	2	2/7/2017 2:51:00 PM	R40557
Surr: Dibromofluoromethane	109	70-130	D	%Rec	2	2/7/2017 2:51:00 PM	R40557
Surr: Toluene-d8	104	70-130	D	%Rec	2	2/7/2017 2:51:00 PM	R40557

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SW Leak Tube
Project: Evaporation Pond Leak Detection **Collection Date:** 2/6/2017 12:25:00 PM
Lab ID: 1702279-002 **Matrix:** AQUEOUS **Received Date:** 2/7/2017 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: **LGT**
Chloride	1100	50	*	mg/L	100	2/8/2017 7:32:42 PM	R40613
Bromide	5.3	0.50		mg/L	5	2/7/2017 1:38:52 PM	R40573
Sulfate	650	10	*	mg/L	20	2/7/2017 1:51:17 PM	R40573
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**
Conductivity	5300	1.0		µmhos/cm	1	2/8/2017 2:39:00 PM	R40606
SM2320B: ALKALINITY							Analyst: **JRR**
Bicarbonate (As CaCO3)	588.8	20.00		mg/L CaCO3	1	2/8/2017 2:39:00 PM	R40606
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/8/2017 2:39:00 PM	R40606
Total Alkalinity (as CaCO3)	588.8	20.00		mg/L CaCO3	1	2/8/2017 2:39:00 PM	R40606
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**
Total Dissolved Solids	3450	40.0	*D	mg/L	1	2/8/2017 5:22:00 PM	30086
SM4500-H+B: PH							Analyst: **JRR**
pH	6.95	1.68	H	pH units	1	2/8/2017 2:39:00 PM	R40606
EPA METHOD 200.7: TOTAL METALS							Analyst: **MED**
Barium	0.061	0.0020		mg/L	1	2/9/2017 10:46:18 AM	30125
Calcium	250	5.0		mg/L	5	2/9/2017 10:48:14 AM	30125
Magnesium	50	1.0		mg/L	1	2/9/2017 9:36:38 AM	30125
Potassium	20	1.0		mg/L	1	2/9/2017 9:36:38 AM	30125
Sodium	930	20		mg/L	20	2/9/2017 9:40:21 AM	30125
EPA METHOD 8260B: VOLATILES							Analyst: **BCN**
Acetone	ND	20	D	µg/L	2	2/7/2017 3:15:00 PM	R40557
Surr: 1,2-Dichloroethane-d4	103	70-130	D	%Rec	2	2/7/2017 3:15:00 PM	R40557
Surr: 4-Bromofluorobenzene	104	70-130	D	%Rec	2	2/7/2017 3:15:00 PM	R40557
Surr: Dibromofluoromethane	108	70-130	D	%Rec	2	2/7/2017 3:15:00 PM	R40557
Surr: Toluene-d8	99.7	70-130	D	%Rec	2	2/7/2017 3:15:00 PM	R40557

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc. **Client Sample ID:** SE Leak Tube
Project: Evaporation Pond Leak Detection **Collection Date:** 2/6/2017 2:00:00 PM
Lab ID: 1702279-003 **Matrix:** AQUEOUS **Received Date:** 2/7/2017 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: **LGT**
Chloride	1300	50	*	mg/L	100	2/8/2017 7:45:07 PM	R40613
Bromide	4.5	0.50		mg/L	5	2/7/2017 2:03:42 PM	R40573
Sulfate	960	10	*	mg/L	20	2/7/2017 2:16:06 PM	R40573
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**
Conductivity	5800	1.0		µmhos/cm	1	2/8/2017 3:04:27 PM	R40606
SM2320B: ALKALINITY							Analyst: **JRR**
Bicarbonate (As CaCO3)	492.8	20.00		mg/L CaCO3	1	2/8/2017 3:04:27 PM	R40606
Carbonate (As CaCO3)	ND	2.000		mg/L CaCO3	1	2/8/2017 3:04:27 PM	R40606
Total Alkalinity (as CaCO3)	492.8	20.00		mg/L CaCO3	1	2/8/2017 3:04:27 PM	R40606
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: **KS**
Total Dissolved Solids	3810	40.0	*D	mg/L	1	2/8/2017 5:22:00 PM	30086
SM4500-H+B: PH							Analyst: **JRR**
pH	7.04	1.68	H	pH units	1	2/8/2017 3:04:27 PM	R40606
EPA METHOD 200.7: TOTAL METALS							Analyst: **MED**
Barium	0.050	0.0020		mg/L	1	2/9/2017 10:49:45 AM	30125
Calcium	260	5.0		mg/L	5	2/9/2017 10:58:04 AM	30125
Magnesium	52	1.0		mg/L	1	2/9/2017 9:42:29 AM	30125
Potassium	20	1.0		mg/L	1	2/9/2017 9:42:29 AM	30125
Sodium	1000	20		mg/L	20	2/9/2017 10:59:52 AM	30125
EPA METHOD 8260B: VOLATILES							Analyst: **BCN**
Acetone	ND	20	D	µg/L	2	2/7/2017 3:38:00 PM	R40557
Surr: 1,2-Dichloroethane-d4	110	70-130	D	%Rec	2	2/7/2017 3:38:00 PM	R40557
Surr: 4-Bromofluorobenzene	106	70-130	D	%Rec	2	2/7/2017 3:38:00 PM	R40557
Surr: Dibromofluoromethane	108	70-130	D	%Rec	2	2/7/2017 3:38:00 PM	R40557
Surr: Toluene-d8	100	70-130	D	%Rec	2	2/7/2017 3:38:00 PM	R40557

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

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702279**

10-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB-30125** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **PBW** Batch ID: **30125** RunNo: **40604**

Prep Date: **2/8/2017** Analysis Date: **2/9/2017** SeqNo: **1272829** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID **LCS-30125** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **LCSW** Batch ID: **30125** RunNo: **40604**

Prep Date: **2/8/2017** Analysis Date: **2/9/2017** SeqNo: **1272830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	53	1.0	50.00	0	105	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Sodium	51	1.0	50.00	0	103	85	115			

Sample ID **LCSLL-30125** SampType: **LCSLL** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **BatchQC** Batch ID: **30125** RunNo: **40604**

Prep Date: **2/8/2017** Analysis Date: **2/9/2017** SeqNo: **1272831** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	ND	1.0	0.5000	0	109	50	150			
Potassium	ND	1.0	0.5000	0	116	50	150			
Sodium	ND	1.0	0.5000	0	105	50	150			

Sample ID **MB-30125** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **PBW** Batch ID: **30125** RunNo: **40604**

Prep Date: **2/8/2017** Analysis Date: **2/9/2017** SeqNo: **1272848** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.0020								
Calcium	ND	1.0								

Sample ID **LCS-30125** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**

Client ID: **LCSW** Batch ID: **30125** RunNo: **40604**

Prep Date: **2/8/2017** Analysis Date: **2/9/2017** SeqNo: **1272849** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.0020	0.5000	0	98.8	85	115			
Calcium	51	1.0	50.00	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#: **1702279**

Hall Environmental Analysis Laboratory, Inc.

10-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **LCSLL-30125**		SampType: **LCSLL**			TestCode: **EPA Method 200.7: Total Metals**					
Client ID: **BatchQC**		Batch ID: **30125**			RunNo: **40604**					
Prep Date: **2/8/2017**		Analysis Date: **2/9/2017**			SeqNo: **1272850**		Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0023	0.0020	0.002000	0	116	50	150			
Calcium	ND	1.0	0.5000	0	101	50	150			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702279**

10-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R40573** RunNo: **40573**
Prep Date: Analysis Date: **2/7/2017** SeqNo: **1271328** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	ND	0.10								
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R40573** RunNo: **40573**
Prep Date: Analysis Date: **2/7/2017** SeqNo: **1271329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	2.5	0.10	2.500	0	98.4	90	110			
Sulfate	9.8	0.50	10.00	0	97.5	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R40613** RunNo: **40613**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272734** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R40613** RunNo: **40613**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272735** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	96.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702279**

10-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **100ng lcs** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **R40557** RunNo: **40557**

Prep Date: Analysis Date: **2/7/2017** SeqNo: **1270915** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		109	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		109	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Sample ID **rb** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **PBW** Batch ID: **R40557** RunNo: **40557**

Prep Date: Analysis Date: **2/7/2017** SeqNo: **1270916** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetone	ND	10								
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1702279**

10-Feb-17

Client: Western Refining Southwest, Inc.
Project: Evaporation Pond Leak Detection

Sample ID **mb-1** SampType: **mblk** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R40606** RunNo: **40606**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272365** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-1** SampType: **lcs** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R40606** RunNo: **40606**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272366** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.44	20.00	80.00	0	95.6	90	110			

Sample ID **mb-2** SampType: **mblk** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R40606** RunNo: **40606**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272391** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID **lcs-2** SampType: **lcs** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R40606** RunNo: **40606**
Prep Date: Analysis Date: **2/8/2017** SeqNo: **1272392** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.24	20.00	80.00	0	95.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#: **1702279**

Hall Environmental Analysis Laboratory, Inc.

10-Feb-17

Client: Western Refining Southwest, Inc.

Project: Evaporation Pond Leak Detection

Sample ID **MB-30086** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **30086** RunNo: **40596**

Prep Date: **2/7/2017** Analysis Date: **2/8/2017** SeqNo: **1272085** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-30086** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **30086** RunNo: **40596**

Prep Date: **2/7/2017** Analysis Date: **2/8/2017** SeqNo: **1272086** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Western Refining Southw Work Order Number: 1702279 RcptNo: 1

Received by/date: LM 02/07/17

Logged By: Anne Thorne 2/7/2017 7:15:00 AM Anne Thorne

Completed By: Anne Thorne 2/7/2017 8:26:47 AM Anne Thorne

Reviewed By: 02/07/17

Chain of Custody

1.	Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3.	How was the sample delivered?	Courier		

Log In

4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11.	Were any sample containers received broken?	Yes ☐	No ☑	
12.	Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

\# of preserved bottles checked for pH: 3
(<2 or >12 unless noted)
Adjusted? NO
Checked by: R

Special Handling (if applicable)

16.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: Date

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Chain-of-Custody Record

Client: Kelly Robinson
Western Refining
Mailing Address: 111 CR 4990
Bloomfield, NM
Phone #:
email or Fax#:
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other ____
☐ EDD (Type) ____

Turn-Around Time:
☐ Standard ☑ Rush ASAP
Project Name:
Evaporation Pond Leak Detection
Project #:
12617031-2
Project Manager:
Kelly Robinson
Sampler: Michael A Wicker
On Ice: ☑ Yes ☐ No
Sample Temperature: 1.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1702279
2-6-17	~~1000~~ 1100	AQ	South Pond	5	Varias	-001
↓	1225	↓	SW Leak Tube	5	↓	-002
↓	1400	↓	SE Leak Tube	4	↓	-003

Analysis Request

HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)		See Attached			Air Bubbles (Y or N)
-001													X			
-002													X			
-003													X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
2-6-17	1520	[signature]	Christ Walt	2/6/17	1520
2/6/17	1910	Christ Walt	[signature]	02/07/17	0715

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Anne Thorne

From: Christine Walters
Sent: Monday, February 06, 2017 7:51 PM
To: Anne Thorne
Cc: Andy Freeman
Subject: COC's
Attachments: COC LT 2-6-17.pdf; COC SMA 2-6-17.pdf

Here are the missing COC for the samples I sent today. One of them the client did have ready and the other I accidently left at the house when I went to ship tonight.

Also, LT did not have the attached list for the sample I sent today from Western. This is the list they need for the three water samples (ASAP turn).
Sodium,
Potassium
Magnesium
Chloride
Calcium
Carbonate
Bicarbonate
Sulfate
Total Alkalinity
TDS
pH
Conductivity

Acetone
Barium
Bromide

Christine Walters
Project Manager
Hall Environmental Analysis Laboratory
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