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Phase 1 Subsurface Investigation Report at the Fee 34 Facility and Race Track Hill Area, Edison Oil Field, California

1 August 2014

Prepared for

Valley Water Management Company
7500 Meany Ave.
Bakersfield, California 93308

K/J Project No. 1365027*00

PT Exhibit 5

Table 2: Summary of Reconnaissance Groundwater Sample Data

Boring ID	Depth (Feet bgs)[a]	Sample Date	pH	EC @ 25°C (µmhos/cm)[b]	Boron[c] (mg/l)[d]	Chloride (mg/l)	TPH-crude oil No Silica Gel[e] (mg/l)	TPH-crude oil[f] Silica Gel (mg/l)
Reconnaisance Samples								
RTH #1	65	4/10/2014	7.46	9,130	14	2,900	<0.5	<0.5
RTH #2	90	4/14/2014	7.34	8,020	13	2,600	2.0	<0.5
RTH #3	95	4/17/2014	6.33	5,110	10	1,600	-	-
RTH #4	90	4/15/2014	7.59	6,400	5.1	1,700	-	-

Notes:

(a) Feet bgs = Feet below ground surface
(b) µmhos/cm = micromhos per centimeter
(c) Water analyzed for Boron was field filtered with a 0.45-micron filter prior to analyses.
(d) mg/l = milligrams per liter
(e) Silica Gel = Preparation with EPA Method 5030 to remove non-anthropogenic hydrocarbons
(f) TPH-crude oil = Total Petroleum Hydrocarbons as Crude Oil

Table 3: Summary of Groundwater Elevation Data

Monitoring Well	Measuring Point[a] Elevation (ft AMSL)[b]	Date	Depth to Groundwater (ft TOC)[c]	Groundwater Elevation (ft AMSL)
RTH #1	1025.85	4/30/2014	47.91	977.94
RTH #3	879.39	4/29/2014	80.83	798.56
RTH #4	871.02	4/29/2014	78.45	792.57

Notes:

(a) Top of PVC Well Casing
(b) ft AMSL = feet above mean sea level, to NAVD88 datum. Wells surveyed in June 2014 by Dee Jaspar & Associates
(c) ft TOC = feet below top of casing

Table 4: Summary of Monitoring Well Sample Data - Inorganic Analytes

Monitoring Well	Sample Date	Sample Name	pH	Electrical Conductivity @ 25°C	Total Dissolved Solids @ 180°C	Calcium	Magnesium	Sodium	Potassium	Boron	Bicarbonate Alkalinity as $CaCO_3$	Carbonate Alkalinity as $CaCO_3$	Chloride	Nitrate as N	Sulfate
			pH Units	µmhos/cm[a]	mg/L[b]	mg/L	mg/L	mg/L	mg/L	mg/l	mg/L	mg/L	mg/L	mg/L	mg/L
RTH #1	4/30/2014	RTH-1-140430	7.31	8,690	6,600	560	44	1,100	8.9	16	240	<8.2[c]	2,900	7.1	42
RTH #3	4/29/2014	RTH-3-140429	6.86	2,810	1,900	200	93	280	25	4.1	120	<8.2	510	0.7	680
RTH #4	4/29/2014	RTH-4-010429	7.52	5,900	4,400	450	170	580	22	6.9	210.	<8.2	1,700	8.3	510
RTH #4	4/29/2014	QCFD-01-140429	7.53	5,900	4,100	430	160	560	22	6.8	220	<8.2	1,700	8.4	510

Notes:

(a) µmhos/cm = micromhos per centimeter
(b) mg/l = milligrams per liter
(c) "<8.2" = not detected above the practical quantitation limit

Table 6: Leak Test Results for the Fee 34 Facility

Test Pond	Duration	Total Seepage (cm)	Average Seepage Rate (mm/day)	Average Seepage Rate (cm/sec)	Standard Deviation of Average Seepage Rate[d] (mm/day)
North Pond	April 22, 2014 16:00 - April 28, 2014 11:30 (5.81 Days)	2.55	4.4	5.1×10^{-6}	0.53
South Pond	April 29, 2014 15:00 - May 5, 2014 11:00 (5.83 Days)	1.02	1.8	2.1×10^{-6}	0.76

Notes:

a) Centimeters
b) Millimeters per Day
c) Centimeters per Day
d) Standard deviation calculation excluded several samples collected early in the test.

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Legend:

- Soil Boring Location
- Monitoring Well Location

Notes:

1.) Flow from Fee 34 Facility is discharged to the pond shown on the map. This is the highest elevation pond, and all other ponds are fed by gravity.
2). Racetrack Hill Area is located at W1/2 Section 24 T27S R29E WDB&M.

N

0 200 400
Feet

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Racetrack Hill Borings and Wells

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July 2014

Figure 3

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Legend:

- - - Approximate Boundary of Irrigated Area

N

0 200 400

Feet

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Racetrack Hill
Sprinkler Irrigation Areas

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Figure

A'

A

RTH #2

RTH #1

EC (μmhos/cm) or Chloride (mg/kg)

100 200 300 400 500

Approximate Ground Surface

Feet Below Ground Surface

Elevation (Feet Above Mean Sea Level)

1,050 1,040 1,030 1,020 1,010 1,000 990 980 970 960 950 940 930 920 910

10 20 30 40 50 60 70 80 90 100

Silty Sand

Layers of Silty Sand and Poorly Graded Sand

Silty Sand to Silty Clayey Sand

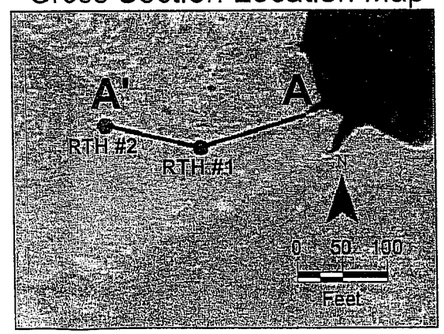
Sandy to Clayey Silt

Clayey to Silty Sand

Pond Shoreline (See Note 1)

Approximate Groundwater Elevation

Cross Section Location Map



0 20 40 60 80 100 120 140 160 180 200 220 240 260

Distance Along Baseline (Feet)

Legend:

- Chloride (mg/kg)
- Electrical Conductivity (μmhos/cm)
- Groundwater Elevation Measured on 4/30/14
- Approximate First Encountered Groundwater Depth
- Silty Sand
- Well Graded Sand
- Poorly Graded Sand
- Clayey to Silty Sand
- Silty Sand and Poorly Graded Sand
- Silty Sand to Silty Clayey Sand
- Silty Sand To Silty Gravelly Sand
- Sandy To Clayey Silt

Note:

1) Ground Elevation at Pond Shoreline Measured From Google Earth 2014.

10 Scale (Feet) 0 20

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Cross Section of RTH#1 and RTH #2

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Figure 9

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