

ACTIVE

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FWQCB-CVR  
FRESNO, CALIF.

**TECHNICAL REPORT  
CALIFORNIA WATER CODE DIRECTIVE PURSUANT TO SECTION 13267  
REGARDING PRODUCED WATER DISCHARGE  
PYRAMID OIL COMPANY  
SANTA FE LEASE  
CARNEROS CREEK FIELD - SECTION 30, R28S, R20E, MD B&M  
December 8, 2015**

Pyramid Oil Company (Pyramid) is submitting this Technical Report pursuant to Central Valley Regional Water Quality Board's (Board) Order dated April 1, 2015. Pyramid is the operator of oil wells located on the Santa Fe Lease in Section 30, R28S, R20E, Carneros Creek Field, Kern County. The Santa Fe lease has 5 ponds used in the process of petroleum production wastewater disposal. There are no other ponds or discharges of produced waters to land.

**WATER SAMPLES:** A representative water sample of the wastewater was collected from the discharge point to the ponds. The required water quality analyses is presented in the attached Zalco Laboratories report, as well as on the enclosed CD excel file.

On July 9, 2015, water samples were collected at the point of discharge to ponds. The samples were collected by Thomas W. Ladd and Sean Spanier using appropriate water sampling protocol. Water sampling containers were provided by Zalco Laboratories. The wastewater samples were collected in the containers, labeled, placed in iced chests and transported to Zalco Laboratories, Inc. under chain of custody for analyses as directed in the Order.

**SURFACE IMPOUNDMENTS DETAILS:** The Pyramid produced water is a result of pumping oil and water from the subsurface Point of Rocks oil sand at a depth of 3,100 feet. The oil and water are separated and contained at the surface tank facility. Water production is about 35 barrels per day. The wastewater is water-legged to the ponds. As a result of retention time during tank oil/water separation, there was no visible crude oil discharged to the pond. This wastewater discharge operates 24 hours per day, 7 days a week, 12-months per year.

The locations and dimensions of each pond is presented in the following table.

TABLE  
POND DETAILS

	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5
APN 085-170-54-00-6					
Latitude	35.460114	35.460284	35.460522	35.460708	35.460358
Longitude	-119.850618	-119.850471	-119.850551	-119.850484	-119.850789
Length - feet	20	40	130	130	40
Width - feet	10	30	36	33	8
Depth - feet	12	12	12	12	8
Discharge/year (Barrels)	not used	12,775	from pond 2	from pond 3	not used

**LOCATION MAPS:** The following figures depict the Pyramid Stanford lease and facility schematic of the pond.

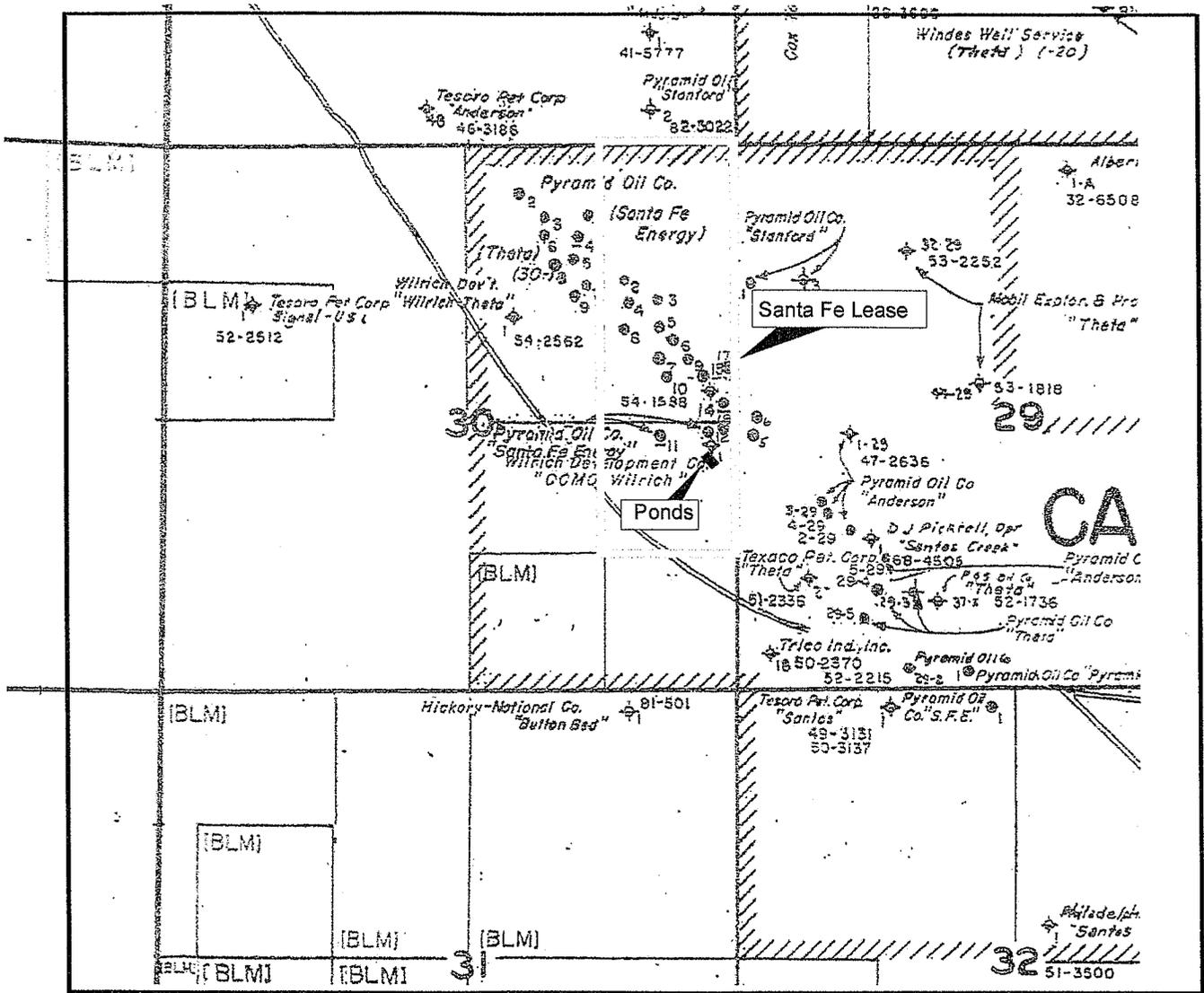


Figure 1 Lease Map  
 Santa Fe Lease  
 Section 30, T28S, R20E

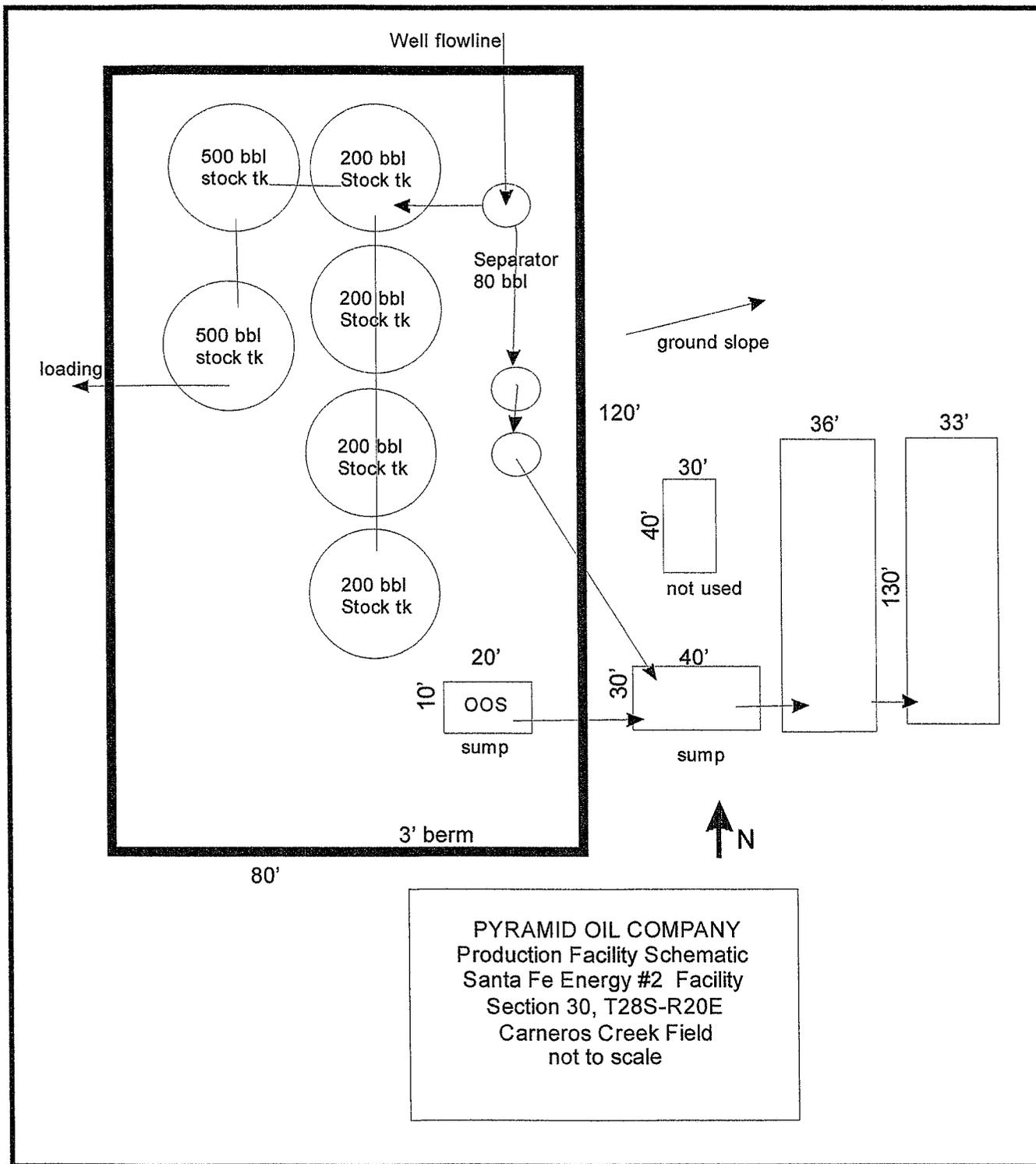


Figure 2 Facility Schematic  
 Santa Fe Lease

**ENVIRONMENTAL ASSESSMENT OF AREA OF INFLUENCE:** The risk of adverse environmental impact to the area within the a ¼ mile radius area of influence by the discharge of oilfield produced wastewater into the Stanford pond is remote. First, the volume of water that is discharged is a moderate average 35 barrel of water per day to the pond. Second, there is no known source of drinking water, i.e., fresh groundwater is absent in the area. And third, the wastewater is non-hazardous.

As a result of this information and review it is concluded that the discharge of wastewater to ponds is a favorable means of wastewater disposal of non-hazardous water from the Pyramid's oil field operations. The risk of adverse environmental impact to the area of influence by the discharge of wastewater into the Pyramid ponds is remote.

Pursuant to this Technical Report, Pyramid plans to prepare an Application/Report of Waste Discharge, Form 200 in order to obtain a WDR for the ponds.

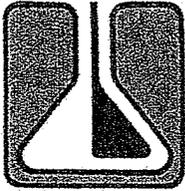
#### **CERTIFICATION STATEMENT**

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*



Thomas W. Ladd  
California Professional Geologist #3568

Attachment: Zalco Laboratories Report of Analyses



ZALCO LABORATORIES, INC.

Analytical & Consulting Services

4309 Armour Avenue  
Bakersfield, California 93308

(661) 395-0539  
FAX (661) 395-3069

August 14, 2015

Sean Spanier  
Pyramid Oil Company  
P O Box 832  
Bakersfield, CA 93302

TEL: (661) 325-1000  
FAX: (661) 325-0100

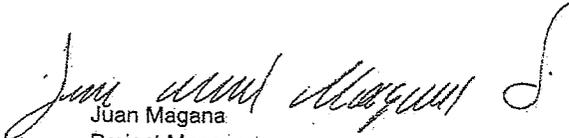
Project ID:  
RE: 1507102

Dear Sean Spanier:

Zalco Laboratories, Inc. received 1 samples on 7/9/2015 for the analyses presented in the following report.

We appreciate your business and look forward to serving you in the future. Please feel free to call our office if you have any questions regarding these test results.

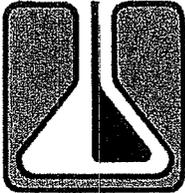
Sincerely,



Juan Magana  
Project Manager  
CC:

NSS: Non Sufficient Sample H: Exceeds Analysis Hold Time TTL: Total Threshold Limit Concentration STLC: Soluble Threshold Limit Concentration TCLP: Toxicity Characteristic Leaching Procedure MCL: Maximum Contaminant Level \*: See Case Narrative  
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Note: Samples analyzed for regulatory purposes should be put on ice immediately after sampling and received by the laboratory at temperatures between 0-6°C. Microbiological analysis requires samples to be at least 4-10°C when received at the laboratory. For additional information regarding the limitations of the method(s) referred to, please call us at 661-395-0539.



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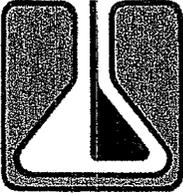
Pyramid Oil Company P O Box 832 Bakersfield, CA 93302	Project: RWQCB Oilfield Ponds - 2Q2015 Project #: Attention: Sean Spanier	Work Order No.: 1507102 Reported: 08/14/2015 Received: 07/09/2015 12:25
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Lab Sample ID: 1507102-01	Collected By: Tom Ladd
Client Sample ID: Sante Fe Lease Produced Water Board Directive Section 13267	Date Collected: 7/8/2015 1:30:00PM

Analyte	Results	PQL	Units	Flag	Method	Date Prepared	Date Analyzed	Init.	
<b>Alkalinity</b>									
Total Alkalinity	2000	10	mg/L		SM 2320B	7/9/15	7/9/15	SAM	
Bicarbonate (HCO3)	1500	10	mg/L		SM 2320B	7/9/15	7/9/15	SAM	
Carbonate (CO3)	470	10	mg/L		SM 2320B	7/9/15	7/9/15	SAM	
Hydroxide (OH)	<10	10	mg/L		SM 2320B	7/9/15	7/9/15	SAM	
<b>CAM, Toxicity (17 Metals)</b>									
			<i>TTLC Limits</i>						
Antimony	<0.20	0.20	500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Arsenic	<0.020	0.020	500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Barium	<0.10	0.10	10000	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Beryllium	<0.010	0.010	75	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Cadmium	<0.010	0.010	100	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Chromium	<0.050	0.050	2500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Cobalt	<0.10	0.10	8000	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Copper	0.13	0.050	2500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Lead	<0.050	0.050	1000	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Mercury	<0.0020	0.0020	20	mg/L	SW846 7470A	8/4/15	8/4/15	SS	
Molybdenum	<0.10	0.10	3500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Nickel	<0.050	0.050	2000	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Selenium	<0.05	0.05	100	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Silver	<0.020	0.020	500	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Thallium	<0.50	0.50	700	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Vanadium	<0.10	0.10	2400	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
Zinc	<0.050	0.050	5000	mg/L	SW846 6010B	7/10/15	7/13/15	SS	
<b>General Chemistry</b>									
			<i>MCL Limits</i>						
Fluoride	<0.10	0.10	2	mg/L	EPA 300.0	7/13/15	7/13/15	MSS	
Nitrate as NO3	<2.00	2.00	45	mg/L	EPA 300.0	7/13/15	7/13/15	MSS	
Electrical Conductivity	4.2	0.010		mmhos/cm	SM 2510B	7/9/15	7/9/15	SAM	
Resistivity	<0.01000	0.01000		Ohm-Meters	SM 2510 B	8/6/15	8/6/15	MSS	
Bromide	1.9	0.10		mg/L	EPA 300.0	7/13/15	7/13/15	MSS	
Chloride	140	100		mg/L	EPA 300.0	7/13/15	7/13/15	MSS	
pH	9.32			pH Units	EPA 150.1	7/9/15	7/9/15	SAM	
Sulfate as SO4	140	25		mg/L	EPA 300.0	7/13/15	7/13/15	MSS	
Total Dissolved Solids	3700	10		mg/L	SM 2540C	7/9/15	7/9/15	MSS	

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Table with 3 columns: Client/Project info, Project details, and Work Order/Reporting info.

Table with 2 columns: Lab/Client Sample IDs and Collection/Date info.

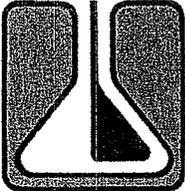
Main analytical results table with columns: Analyte, Results, PQL, Units, Flag, Method, Date Prepared, Date Analyzed, Init.

Table for Surrogates with columns: Surrogates, % Recovery, Recovery Limits, Flag.

Table for Polynuclear Aromatic Hydrocarbons with columns: Analyte, Results, PQL, Units, Method, Date Prepared, Date Analyzed, Init.

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Pyramid Oil Company P O Box 832 Bakersfield, CA 93302	Project: RWQCB Oilfield Ponds - 2Q2015 Project #: Attention: Sean Spanier	Work Order No.: 1507102 Reported: 08/14/2015 Received: 07/09/2015 12:25
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Lab Sample ID: 1507102-01 Client Sample ID: Sante Fe Lease Produced Water Board Directive Section 13267	Collected By: Tom Ladd Date Collected: 7/8/2015 1:30:00PM
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Analyte	Results	PQL	Units	Flag	Method	Date Prepared	Date Analyzed	Init.
<b>Polynuclear Aromatic Hydrocarbons</b>								
Benzo (a) anthracene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Chrysene	10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Benzo (b) fluoranthene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Benzo (k) fluoranthene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Benzo (a) pyrene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Dibenz (a,h) anthracene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
Benzo (g,h,i) perylene	<10.0	10.0	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
2-Methylnaphthalene	387	100	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
1-Methylnaphthalene	272	100	ug/L		SW846 8270C	7/15/15	7/21/15	JMM
<b>Surrogates</b>		<b>% Recovery</b>	<b>Recovery Limits</b>	<b>Flag</b>				

Nitrobenzene-d5	28.7	0-95				7/21/15 11:06
2-Fluorobiphenyl	37.6	0-92				7/21/15 11:06
Terphenyl-d14	79.4	0-100				7/21/15 11:06

### Subcontracted Analyses

Gross Alpha	NSS	15.0	pCi/L		SM 7110C	7/29/15	7/30/15	MCS
Radium-226	NSS	3.00	pCi/L		E903.1	7/24/15	7/30/15	MCS
Radium-228	NSS	2.00	pCi/L		EPA Ra-05	8/3/15	8/7/15	MCS
Uranium (ug/L)	NSS	20.0	pCi/L		E908	8/12/15	8/12/15	MCS

### Volatile Organic Compounds

m,p-Xylene	1430	25.0	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
Benzene	1340	250	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
Xylenes, total	2170		ug/L		SW846 8260B	7/20/15	7/20/15	HLP
Methyl tert-Butyl Ether	<5.00	5.00	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
Ethylbenzene	512	25.0	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
Toluene	4780	250	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
o-Xylene	738	25.0	ug/L		SW846 8260B	7/20/15	7/20/15	HLP
<b>Surrogates</b>		<b>% Recovery</b>	<b>Recovery Limits</b>	<b>Flag</b>				

1,2-Dichloroethane-d4	104	89-165				7/20/15 14:12
Toluene-d8	82.7	65-124				7/20/15 14:12
4-Bromofluorobenzene	106	94-114				7/20/15 14:12

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**ATTACHMENT B****Water Quality Analysis**

Wastewater samples collected from the ponds shall be analyzed by a laboratory certified by the Environmental Laboratory Accreditation Program using currently applicable United States Environmental Protection Agency-approved analytical methods for water for the following:

- A. Total dissolved solids;
- B. Metals listed in California Code of Regulations, title 22, section 66261.24. subdivision (a)(2)(A);
- C. Benzene, toluene, ethylbenzene, and xylenes;
- D. Total petroleum hydrocarbons as crude oil;
- E. Polynuclear aromatic hydrocarbons (including acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorine, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene);
- F. Radionuclides listed under California Code of Regulations, title 22, Table 64442;
- G. Major and minor cations (including sodium, potassium, magnesium, and calcium);
- H. Major and minor anions (including nitrate, chloride, sulfate, carbonate, bicarbonate, and bromide);
- I. Trace elements (including lithium, strontium, boron, iron, and manganese).

**Reporting Requirements**

Water Quality information shall be submitted in a technical report that includes at a minimum:

- A. Site plan(s) with the location(s) of where the samples were collected;
- B. A description of how the samples, representative of the pond contents, were collected;

Table(s) of analytical results organized by pond number with the data also submitted electronically as an Excel spreadsheet.