



## Central Valley Regional Water Quality Control Board

22 April 2019

John Whisler, President  
Incremental Oil and Gas USA Holdings Inc.  
600 17th Street, Suite 2625  
Denver, CO 80202

**CERTIFIED MAIL**  
**7018 1830 0001 0015 1792**

**NOTICE OF APPLICABILITY (NOA), CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER NUMBER THREE, INCREMENTAL OIL AND GAS USA HOLDINGS INC., SHEEP SPRINGS LEASE, CYMRIC OIL FIELD, KERN COUNTY**

Incremental Oil and Gas USA Holdings Inc. (Incremental) operates the Sheep Springs Lease (Lease) in the Cymric Oil Field west of Highway 33. Two active unlined surface impoundments (ponds) are present at the lease and are used for the disposal of oil field produced wastewater (discharge). The ponds are in the southeast corner of Section 17, T29S, R21E, MDB&M. Pond #1 is 110 feet (ft.) by 42 ft., by 6 ft. deep. Pond #2 is 95 ft. by 32 ft., by 6 ft. deep.

On 4 August 2017, Central Valley Water Board staff received a Notice of Intent (NOI), with a cover letter dated 1 August 2017, for coverage of the ponds under Order Number R5-2017-0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three (General Order Three). The NOI included a copy of Form 200 "Application/Report of Waste Discharge...", an application fee, and a technical report dated August 2017 and titled "Technical Report For NOI, Incremental Oil and Gas USA Holdings Inc., Sheep Springs Lease..." (NOI Technical Report). The NOI Technical Report was authored by WZI Inc., and signed and stamped by Richard B. Wilson, a state of California licensed Professional Engineer.

On 3 December 2018, Central Valley Water Board staff received a document dated November 2018 and titled "Incremental Oil and Gas USA Holdings Inc., Monitoring Well Installation Report, Sheep Springs Lease,..." (Monitoring Well Installation Report). The Monitoring Well Installation Report contained information needed to complete Incremental's NOI application for coverage under General Order Three.

This letter serves as formal notice that General Order Three is applicable to Pond #1 and Pond #2 on the Lease. General Order Number **R5-2017-0036-013** is hereby assigned to all produced wastewater discharges into Pond #1 and Pond #2. Incremental should become familiar with all of the requirements, time schedules, prohibitions, and provisions of General Order Three, and Monitoring and Reporting Program R5-2017-0036 (MRP).

Coverage of produced wastewater discharges into Pond #1 and Pond #2 on the Sheep Springs Lease is allowable under General Order Three because information provided in the NOI

KARL E. LONGLEY ScD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

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Technical Report shows that Pond #1 and Pond #2 have received produced wastewater discharges during the 10 years prior to 26 November 2014.

This letter also serves as formal notice that Cleanup and Abatement Order No. R5-2015-0714 (CAO), issued on 14 August 2015 for ponds at the Sheep Springs Lease in the Cymric Oil Field, is hereby rescinded.

As stated in Water Code section 13263, all discharges of waste into waters of the state are privileges, not rights. General Order Three does not create a vested right for Incremental to continue the discharges of waste to the ponds. Failure to prevent conditions that create or threaten to create pollution or nuisance or cause degradation will be sufficient reason to modify, revoke, or enforce the provisions of General Order Three, as well as prohibit further discharge.

In 2006, the Central Valley Water Board, the State Water Resources Control Board (State Water Board), and regional stakeholders began a joint effort to address salinity and nitrate problems in the region and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. The CV-SALTS effort might effect changes to the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) that would necessitate the re-opening of General Order Three.

## **FACILITY SPECIFIC REQUIREMENTS**

1. Incremental shall maintain exclusive control of the discharge and shall comply with all of the requirements and timelines of General Order Three and the MRP.
2. The required annual fee specified in the annual billing from the State Water Board shall be paid until coverage under General Order Three is officially terminated. Incremental must notify the Central Valley Water Board in writing to request termination.
3. Under Discharge Specifications, Item B.2., General Order Three states: *"The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to the pond between 26 November 2004 and 26 November 2014. The discharge flow also shall not exceed the maximum design flow of the Facility's limiting unit as described by the technical data in the NOI."* The maximum average monthly effluent flow to the ponds identified in the NOI Technical Report was 13,432 barrels (bbls) or 564,144 gallons (gal). Incremental shall not exceed this monthly maximum discharge volume.
4. Incremental shall not discharge produced wastewater outside of the ponds except for a permitted dust control use. If Incremental intends to apply for use of produced wastewater for dust control, a proposed management plan as described in Provision E.6 of General Order Three must be submitted at least **90 days** prior to the anticipated discharges.

5. **By 22 July 2019**, Incremental shall, pursuant to Provision E.3 of General Order Three, submit written certification that acceptable flow meters have been installed at a location or locations to ensure the accurate measurement of all discharge flows. The certification shall be accompanied by: (1) a description of the flow metering devices installed, (2) a diagram showing their locations, and (3) evidence demonstrating that the devices were properly calibrated. An engineered alternative may be used if approved in writing by the Central Valley Water Board's Executive Officer.
6. Incremental shall operate and maintain all ponds sufficiently to protect the integrity of containment and berms and prevent overtopping and/or structural failure. Discharges not authorized by the General Order and not described in the NOI Technical Report should be reported to the Central Valley Water Board Fresno office. Discharge of wastes other than those described in the NOI Technical Report is prohibited. Incremental shall file a Report of Waste Discharge relative to any material change or proposed change in the character, location, or volume of the discharge.
7. The NOI Technical Report states that the facility does not generate significant solid waste and that "... *solid buildup in the unlined ponds should not be an issue.*" Incremental shall monitor the accumulation of solids in the ponds and if needed, clean out solids from the ponds as required by General Order Three Discharge Specifications B.16. Incremental shall characterize any solid waste generated in accordance with the Solid Waste Monitoring section of the MRP, and Incremental shall comply with General Order Three Solids Disposal Specifications D.1 through D.5.
8. Incremental has not indicated whether the wells on the Sheep Springs Lease have received any "well stimulation treatment" as defined by California Code of Regulations (CCR) title 14, section 1761.

**By 27 May 2019** Incremental shall inform the Central Valley Water Board, in writing, as to whether the ponds accept produced wastewater discharge from any wells that have undergone a "well stimulation treatment," as defined by California Code of Regulations (CCR), title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation). If the ponds accept wastewater from wells that have undergone a "well stimulation treatment," then Incremental shall comply with the compliance schedule in General Order Three, Provision E.8. and, **by 22 July 2019**, submit either: 1) a work plan to conduct studies necessary to demonstrate that the discharges of produced wastewater from wells that have been stimulated do not contain well stimulation treatment fluids in concentrations that could adversely affect beneficial uses of waters; or, 2) a work plan for an alternate disposal method for wastewater discharges from wells with a history of, or are planned to receive a "well stimulation treatment."

9. Incremental shall, pursuant to Provision E.4.b of General Order Three, comply with the time schedule on pages 23 through 26 of General Order Three. This time schedule establishes a 5-year process, during which Incremental must demonstrate that the natural background groundwater quality for the facility meets the Sources of Drinking Water Policy exception criteria and/or parallel exception criteria outlined in this General

Order (Findings 22 through 24) and thus the current Basin Plan groundwater beneficial uses are eligible for de-designation.

Initial tasks that Incremental must complete include the following: Task 1 – on an ongoing basis, participate in the CV-SALTS Group to facilitate the Basin Plan Amendment (BPA) process under the Salt and Nutrient Management Plan; Task 2 – submit **by 4 months** from the date of this NOA, an outline of the BPA Work Plan to the Central Valley Water Board for review; Task 4 – submit **by 10 months** from the date of this NOA, the completed BPA Work Plan to the Central Valley Water Board for review; Task 6 – implement the BPA Work Plan and submit, **by 36 months** from the date of this NOA, a final technical report, as well as semi-annual progress reports, to the Central Valley Water Board for review. Subsequent tasks require review of the proposed BPA by stakeholder groups, the public, the State Water Board, and the Office of Administrative Law.

The NOI Technical Report states that, *“Under the Clean Water Act, section 402 {1}(2), the EPA shall not require a section 402 permit for discharges of stormwater runoff from oil and gas exploration, production, processing or treatment operations that do not come into contact with waste products located on-site. The list of exempt facilities includes well sites, access roads, gathering line systems, storage tanks and oil-water separators, and gas and oil treatment and conditioning equipment; all of which make up the Incremental facility. Therefore, the Incremental Oil and Gas facility is exempt from the Industrial Storm Water General Permit. As a result of the exemption for the Industrial Storm Water General Permit, Incremental will be applying for No Exposure Certification {NEC} coverage using the SMARTS system.”* Order Number 2014-0057-DWQ (NPDES General Permit CAS000001) specifies waste discharge requirements for discharges of storm water associated with industrial activities. If the conditions or regulatory policies change, the Lease may need coverage under NPDES General Permit CAS000001. There is not a need to obtain coverage under NPDES General Permit CAS000001 at this time.

The MRP requires extensive monitoring requirements. Failure to comply with the requirements in General Order Three and the MRP could result in an enforcement action as authorized by provisions of the California Water Code. A copy of General Order Three and the MRP is included with the enclosures to this notice. A copy can also be found online at: [https://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/general\\_orders/r5-2017-0036.pdf](https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2017-0036.pdf).

The MRP includes monitoring and reporting of chemicals and additives. Incremental should become familiar with those requirements. The Central Valley Water Board will review the MRP periodically and revise requirements when necessary. The MRP can be modified if Incremental provides sufficient data to support the proposed changes. If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after a statistically significant number of sampling events, Incremental may request the MRP be revised by the Executive Officer to reduce monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for reduction in monitoring frequency.

Incremental must comply with the Central Valley Water Board's Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991 (Standard Provisions). A copy of the Standard Provisions is included with the enclosures to this notice.

A copy can also be found online at:

[https://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/std\\_provisions/wdr-mar1991.pdf](https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/std_provisions/wdr-mar1991.pdf).

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review this action in accordance with Water Code section 13320 and CCR, title 23, division 3, chapter 6, section 2050 and those that follow. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Notice of Applicability, except that if the thirtieth day following the date falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day.

## **SUBMISSIONS**

Incremental shall submit electronic copies of all work plans, reports, analytical results, and groundwater elevation data over the internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker) at

[http://www.waterboards.ca.gov/ust/electronic\\_submittal/index.shtml](http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml).

A frequently asked question document for GeoTracker can be found at

[http://www.waterboards.ca.gov/ust/electronic\\_submittal/docs/faq.pdf](http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf).

Electronic submittals shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site. Uploads to GeoTracker shall be completed on or prior to the due date. The Geotracker site Global I.D. number that is associated with this NOA is T10000006964.

In addition documents that are less than 50 MB shall be sent via electronic mail to:

[centralvalleyfresno@waterboards.ca.gov](mailto:centralvalleyfresno@waterboards.ca.gov). Documents that are 50 MB or larger shall be transferred to a disk and mailed to the Central Valley Water Board office at 1685 E Street, Fresno, CA 93706.

Please review the enclosed memorandum for more information. If you have any questions regarding this matter, please contact Zachary Jarvie of this office at (559) 445-5455 or at [zachary.jarvie@waterboards.ca.gov](mailto:zachary.jarvie@waterboards.ca.gov).

For [Signature]

Patrick Pulupa  
Executive Officer

Enclosures: 26 April 2019 Memorandum  
1 March 1991 Standard Provisions  
General Order Three

cc: Cameron Campbell, District Deputy, Division of Oil Gas and Geothermal Resources,  
Bakersfield (NOA and Memorandum only, Via Email)  
Richard B. Wilson, Civil Engineer, WZI Inc., Bakersfield  
Allen Waggoner, Senior Professional Geologist, WZI Inc., Bakersfield  
(NOA and Memorandum only, Via Email)  
Andrew Grinberg, National Campaigns Special Projects Manager, Clean Water Action  
(NOA and Memorandum only, Via Email)  
Bill Allayaud, California Director of Government Affairs, Environmental Working Group  
(NOA and Memorandum only, Via Email)

## Central Valley Regional Water Quality Control Board

**TO:** Clay Rodgers  
Assistant Executive Officer

W. Dale Harvey  
Supervising Engineer  
RCE No. 55628

**FROM:** Michael L. Pfister  
Senior Engineering Geologist  
PG No. 5946

Zachary J. Jarvie  
Engineering Geologist  
PG No. 9662

**DATE:** 22 April 2019

**SUBJECT:** NOTICE OF APPLICABILITY (NOA), CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER NUMBER THREE, INCREMENTAL OIL AND GAS USA HOLDINGS INC., SHEEP SPRINGS LEASE, CYMRIC OIL FIELD, KERN COUNTY

Incremental Oil and Gas USA Holdings Inc. (Incremental) operates the Sheep Springs Lease (Lease) in the Cymric Oil Field. Two unlined surface impoundments (ponds) are used for the disposal of oil field produced wastewater (discharge). The ponds are in the southeast corner of Section 17, T29S, R21E, MDB&M. This memorandum provides a summary and evaluation of the information provided for coverage of the ponds under Order Number R5-2017-0036, Waste Discharge Requirements General Order For Oil Field Discharges to Land, General Order Number Three (General Order Three).

### BACKGROUND INFORMATION

General Order Three regulates oil field produced wastewater discharges where: 1) produced wastewater exceeds the maximum oil field discharge limits for electrical conductivity, chloride, and boron contained in the Water Quality Control Plan for the Tulare Lake Basin, Third Edition, Revised May 2018 (Basin Plan); and 2) there is no first encountered groundwater or first encountered groundwater is of poor quality and does not support beneficial uses as identified in the Basin Plan as municipal and domestic supply (MUN), or agricultural supply (AGR), or industrial service supply (IND) or industrial process supply (PRO).

## Central Valley Regional Water Quality Control Board

**TO:** Clay Rodgers  
Assistant Executive Officer

W. Dale Harvey *WDH*  
Supervising Engineer  
RCE No. 55628

**FROM:** Michael L. Pfister *MLP*  
Senior Engineering Geologist  
PG No. 5946

Zachary J. Jarvie *MLP for ZJJ*  
Engineering Geologist  
PG No. 9662

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## **SUBMITTED INFORMATION AND RECENT REGULATORY HISTORY**

On 30 January 2015, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff inspected the ponds. As a result of this inspection, a Notice of Violation (NOV) was issued by Central Valley Water Board staff on 25 March 2015 for discharges into ponds without waste discharge requirements (WDRs).

On 15 April 2015, Central Valley Water Board staff issued "*California Water Code Directive Pursuant to Section 13267*" (13267 Order), which required that Incremental "*collect representative samples of wastewater within each of the ponds.*" In response, a report dated 28 May 2015, and titled "*Incremental Oil and Gas, Response To RWQCB Section 13267 Order...*" (13267 Report) was prepared and submitted by Environmental Consultants Inc. (EnviroTech). The 13267 Report contained analytical results from samples collected on 15 April 2015. Incremental issued an addendum to the 13267 Report, dated 24 June 2015.

On 14 August 2015, Central Valley Water Board staff issued Cleanup and Abatement Order R5-2016-0714 (CAO) to Incremental. In response to the CAO, Incremental submitted a letter dated 13 October 2015 that contained a document prepared by WZI Inc. (WZI) and titled "*Incremental Oil and Gas USA Holdings Inc, Work Plan, Sheep Springs Lease ...*" (Work Plan). In response to the Work Plan, Central Valley Water Board staff issued a review letter dated 21 February 2017, that required Incremental to submit, by 31 March 2017, a revised work plan to address deficiencies identified in the Work Plan. In response Incremental submitted to the Central Valley Water Board revisions to the Work Plan in a letter dated 31 March 2017. The Work Plan, as revised by Incremental, was approved by Central Valley Water Board staff in a letter dated 9 June 2017. The revised Work Plan included plans for the installation of groundwater monitoring wells.

On 4 August 2017, Central Valley Water Board staff received a Notice of Intent (NOI), with cover dated 1 August 2017, for coverage of the ponds under General Order Three. The NOI included a copy of Form 200 "*Application/Report of Waste Discharge...*", and application fee, and a document, dated August 2017 and titled "*Technical Report For NOI, Incremental Oil and Gas USA Holdings Inc., Sheep Springs Lease...*" (NOI Technical Report). The Technical Report was authored by WZI and signed and stamped by Richard B. Wilson, a state of California licensed Professional Engineer. The copy of Form 200 that was included with the NOI lacked a signature page. On 27 November 2018 WZI staff emailed to Central Valley Water Board staff a signed copy of Form 200, dated 5 September 2017.

On 3 December 2018, Central Valley Water Board staff received a document dated November 2018 and titled "*Incremental Oil and Gas USA Holdings Inc., Monitoring Well Installation Report, Sheep Springs Lease,...*" (Monitoring Well Installation Report). The Monitoring Well Installation Report contained information needed to compete Incremental's NOI application for coverage under General Order Three. This included sampling results from two groundwater monitoring wells (MW-1 and MW-3) installed on the Sheep Springs Lease. A planned third well (MW-2) was not installed because no groundwater to a depth of 300 feet (ft.) below ground surface (bgs) was encountered at its proposed location.

## POND CHARACTERISTICS

Dimensions and coordinates for the ponds are listed in **Table 1** below. The information in Table 1 is from the NOI Technical Report.

**Table 1 Pond Information for the Sheep Springs Lease.**

Pond I.D.(s)	Dimensions (ft.)			Volume at 2 ft. of freeboard	Approximate center of pond coordinates in decimal degrees
	Length	Width	Depth	Barrels (bbls)	Latitude, Longitude
Pond #1	110	43	6	3,370	35.399266, -119.734668
Pond #2	95	32	6	2,166	35.398861, -119.734505

The NOI Technical Report states that *“Wastewater is separated from the extracted crude oil and discharged into the unlined impoundments for evaporation and percolation.”*

Exhibit 3 of the NOI Technical Report shows that the path of wastewater discharge flows from the *“Wash Tank”* (also called the *“Waste Water Tank”*) into Pond #1, and from Pond #1 into Pond #2.

## DISCHARGE CHARACTERISTICS

### Flow Volumes

The NOI Technical Report states that *“The maximum average monthly effluent flow to the ponds was 13,432 bbls in 2014, which corresponds to a daily rate of 442 bbls of water per day being discharged to the pond.”*

Under Discharge Specifications, Item B.2., General Order Three states *“The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to pond between 26 November 2004 and 26 November 2014. The discharge flow also shall not exceed the maximum design flow of the Facility’s limiting unit as described by the technical data in the NOI.”*

The NOI Technical Report provided a water balance showing excess capacity for historical discharges to the ponds. Produced wastewater must not over top and flow outside of the ponds. General Order Three requires that a minimum of two feet of freeboard must be maintained at all times. The monthly discharges, up to and including the above noted maximum monthly volume of 13,432 bbls cannot be used to justify a violation of the General Order’s requirements. The General Order prohibits all wastewater discharges outside of the ponds. Wastewater is not used and is not permitted for use as dust control on the Lease.

### **Well Stimulation Treatment Fluids**

General Order Three, Prohibition A.5 states: “The discharge of produced wastewater from wells containing well stimulation treatment fluids is prohibited except as provided by Provision E.7.”

The NOI Technical Report does not report whether or not any of the wells that produce wastewater that is discharged to the ponds have received a well stimulation treatment as defined by California Code of Regulations (CCR), title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation).

Incremental needs to identify whether there are any wells on the Sheep Springs Lease Lease have received any “well stimulation treatment” as defined by CCR title 14, section 1761. If the ponds accept wastewater from wells that have undergone a “well stimulation treatment,” then Incremental must comply with the requirements and compliance schedule in General Order Three, Provision E.8.

### **Waste Constituents**

The 13267 Report with addendum date 24 June 2015 contained analytical results from a produced wastewater sample collected on 15 April 2015. On 21 February 2018 WZI staff emailed to Central Valley Water Board staff, analytical results from produced wastewater samples collected from the ponds on the 27 June 2017. The results of these sampling events are summarized in **Table 2**, below. Units of measurement are milligrams per liter (mg/L), micrograms per liter ( $\mu\text{g/L}$ ), and picocuries per liter (pCi/L).

**Table 2 Selected produced wastewater analytical data from the Sheep Springs Lease.**

Sample Source	Pond #1	Pond #1	Pond #2	Facility*	
Lab Sample ID	440-107179-1	1716792-02	1716792-03	1716792-01	
Sample Date	15 April 2015	20 June 2017	20 June 2017	20 June 2017	
	<b>Concentration</b>				<b>Units</b>
<b>Constituents of Salinity</b>					
Total Dissolved Solids (TDS)	25,000	25,000	26,000	25,000	mg/L
Chloride	13,000	15,000	16,000	15,000	mg/L
Boron	140	160	160	150	mg/L
<b>Total Petroleum Hydrocarbons (TPH)</b>					
Gasoline, C4 - C12	19	--	--	--	mg/L
Diesel, C13 - C22	170	--	--	--	mg/L
Diesel, C23 - C40	130	--	--	--	mg/L
Oil and Grease	--	28	23	45	mg/L
TPH	--	2.6	0.95 J	6.0	mg/L
<b>Volatile Organic Compounds (VOCs)</b>					
Benzene	260	<0.083	<0.083	350	µg/L
n-Butylbenzene	--	<0.11	<0.11	2.0	µg/L
sec-Butylbenzene	--	0.33 J	<0.15	3.6	µg/L
tert-Butylbenzene	--	0.18 J	0.13 J	<0.13	µg/L
Ethylbenzene	120	1.7	0.22 J	90	µg/L
Isopropylbenzene	--	0.61	<0.14	15	µg/L
p-Isopropyltoluene	--	1.8	0.68	5.2	µg/L
Naphthalene	--	<0.36	<0.36	46	µg/L
n-Propylbenzene	--	0.19 J	<0.11	13	µg/L
1,2,4-Trimethylbenzene	--	<0.12	0.16 J	96	µg/L
1,3,5-Trimethylbenzene	--	3.7	0.33 J	28	µg/L
Toluene	290	<0.093	0.19 J	620	µg/L
Xylenes, Total	440	1.3	<0.36	320	µg/L
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>					
Acenaphthene	<29	<0.30	<0.15	0.89	µg/L
Chrysene	62	<0.29	<0.14	<0.14	µg/L
Fluorene	200	<0.29	<0.14	2.5	µg/L
Naphthalene	240	<0.25	<0.12	5.8	µg/L
Phenanthrene	470	<0.27	<0.14	6.5	µg/L
Pyrene	<29	<0.33	<0.16	0.35 J	µg/L
<b>Radioactivity</b>					
Gross Alpha	399 ± 237	59.4 ± 90.9	80.8 ± 78.7	81.6 ± 93.0	pCi/L
Gross Beta	132 ± 77.1	217 ± 102	54.7 ± 70.7	31.7 ± 73.4	pCi/L
Radium-226	44.6 ± 4.36	64.3 ± 12.1	73.9 ± 14.5	62.4 ± 12.4	pCi/L
Radium-228	32.8 ± 3.85	51.1 ± 12.5	56.7 ± 13.7	54.7 ± 13.2	pCi/L
Uranium	<3.4	<1.7	<1.7	<1.7	pCi/L

\* The "Facility" sample consists of produced water prior to being discharged to the ponds

With regards to chemicals or additives used in oil exploration and production, the NOI Technical Report states that Incremental *“...uses two chemicals that could potentially enter the wastewater stream. The first of which is DMO 8000, a demulsifier, which is used in Sheep Springs C-2. The second is PAO 103, a paraffin dispersion chemical, which is used in the tank battery at the facility. Both of these chemicals have maximum daily amounts of 1 gallon per day (91.25 gallons per quarter).”*

With regards to hazardous waste generation, the NOI Technical Report does not indicate whether or not wastes produced at the facility are “hazardous.” Prohibitions, Item A.6., of General Order Three states that, *“acceptance, treatment, or discharge of ‘hazardous waste,’ as defined in the CCR, title 22, section 66261.1 et seq., is prohibited.”*

### **Dust Control**

Provision E.6 of General Order Three states: *“Dischargers wishing to use produced wastewater at the Facility for dust control or in construction activities shall provide a proposed management plan for such activities.”* The Provision also states: *“The management plan must be submitted to the Executive Officer at least **90 days** prior to the anticipated discharges. Discharges shall not occur without Executive Officer written approval of the management plan.”*

The NOI Technical Report states that, *“Incremental does not plan to apply for dust control activities at this time.”*

### **Solid Waste**

Regarding the disposal of solid wastes, the NOI Technical Report states: *“The facility does not generate significant solid waste.”*

Discharge Specifications, Item B.16., of General Order Three requires that the Discharger monitor the accumulation of solids within the ponds and as necessary remove them to maintain adequate treatment storage and capacity. General Order Three’s Section D., titled *“Solids Disposal Specifications”* includes handling and storage requirements for solids removed.

### **HYDROGEOLOGIC CHARACTERIZATION**

The NOI Technical Report states that *“The Sheep Springs Lease is located in the southwestern portion of the San Joaquin Valley, bordered by the Temblor Range...”* The NOI Technical Report states that, *“this is an area of moderate to intense folding and faulting. The study area is located on a southwest plunging anticline, with the Plio-Pleistocene Tulare exposed at the surface of the anticline and Recent Alluvium surrounding the anticline. The surface impoundments are to the southwest of the anticline underlain by a thin veneer of Alluvium consisting of gravel, sand and clay. The Tulare, which underlies the Alluvium, is non-marine Tulare consisting of poorly consolidated interbedded clay, silt, sand and minor conglomerate.”*

The NOI Technical Report states that a NE-SW trending strike slip fault known as the Bacon Hills Fault *“...is located adjacent to the lease to the northeast.”* The NOI Technical Report estimates that, west of the Bacon Hill Fault and where the ponds are located, the depth to groundwater is approximately 200 ft. bgs. East of the Bacon Hill Fault, the depth to groundwater is indicated as being approximately 300 ft. bgs. These estimated groundwater depths were based on the interpretation of geophysical well logs. The NOI Technical Report also states that *“the depth to water to the east of the fault is further supported by groundwater measurement in the abandoned water well drilled in Section 17 which encountered groundwater at a depth of 330 feet.”* The NOI Technical Report states that, “Based on changes of depth to water on either side of the Bacon Hills Fault, the fault provides a barrier to the migration of water on the west side of the fault to the groundwater basin to the east.

Shallow groundwater was encountered in monitoring wells that were installed on the Lease in 2017 and 2018. While installing MW-1, which is located approximately 1,100 ft. west/southwest of the center of the ponds, groundwater was encountered at approximately 200 ft. bgs. At the proposed location of MW-2, which is located approximately 1,000 ft. northeast of the center of the ponds, groundwater was not encountered above the maximum drilling depth of 300 ft. While installing MW-3, which is located approximately 650 ft. east southeast of the center of the ponds, groundwater was encountered at approximately 171.5 ft. bgs. *“Exhibit 10”* in the Monitoring Well Installation Report dated November 2018 shows that on 24 May 2018 groundwater elevations in the wells were 697.97 ft. above mean sea level (amsl) in MW-1 and 682.67 ft. amsl in MW-2. The Monitoring Well Installation Report states that, *“Since no water was encountered at the location of MW-2, only two groundwater elevations (MW-1 and MW-3) could be calculated and a true groundwater gradient could not be determined. Based on the calculated groundwater elevations for wells MW-1 and MW-3, the groundwater flow direction appears to be generally to the east.”*

The Monitoring Well Installation Report dated November 2018 provides groundwater depth and quality information for the area surrounding the ponds. Selected analytical results and groundwater elevation data from the monitoring wells is summarized in Table 3, below.

**Table 3 Selected data from monitoring well sampling on 20 November 2017 and 24 May 2018.**

Well ID Lab No. Sample Date	MW-1 1733218-01 11/20/2017	MW-1 1816768-02 5/24/2018	MW-3 1816768-01 5/24/2018	
Groundwater Elevation (ft. amsl)	692.01	697.97	682.67	
<b>Concentration</b>				<b>Units</b>
<b>Constituents of Salinity</b>				
TDS	4,200	--	19,000	mg/L
Chloride	1,500	--	7,600	mg/L
Boron	20	--	64	mg/L
<b>Petroleum Hydrocarbons</b>				
Total Petroleum Hydrocarbons	<5.0	--	<5.0	mg/L
<b>VOCs</b>				
Benzene	0.28 J	--	0.83	µg/L
Toluene	0.30 J	--	0.69	µg/L
1,2,4-Trimethylbenzene	0.38 J	--	<0.5	µg/L
p- & m-Xylenes	<0.28	--	<0.28	µg/L
o-Xylene	<0.082	--	0.15 J	µg/L
<b>PAHs</b>				
Naphthalene	--	<0.025	0.16	µg/L
<b>Radioactivity</b>				
Gross Alpha	28.0 ± 19.4	--	27.0 ± 57.2	pCi/L
Gross Beta	12.6 ± 13.0	--	15.9 ± 69.6	pCi/L
Radium-226	7.73 ± 5.88	--	1.73 ± 0.719	pCi/L
Radium-228	3.21 ± 4.00	--	2.06 ± 0.688	pCi/L
Uranium	9.0	--	24.0	pCi/L

**PROVISION 4 OF GENERAL ORDER THREE**

Provision 4 of General Order Three requires that Incremental either: 1) demonstrate that “...there is no groundwater beneath the Facility discharge areas and that produced wastewater and constituents associated with other approved wastes discharged at the Facility will not migrate into areas that there is groundwater with designated beneficial uses,” or 2) comply with the timeline outlined in General Order Three Provision 4.b. and obtain a Basin Plan amendment to de-designate the beneficial uses of underlying groundwater.

Based on the results of the shallow groundwater investigations and monitoring well sampling described above, Incremental will have to comply with the timeline outlined in General Order Three Provision 4.b. and obtain a Basin Plan amendment to de-designate the beneficial uses of underlying groundwater.

## **SUMMARY**

Monitoring wells installed on the Sheep Springs Lease intersected shallow groundwater at depths between approximately 170 and 200 ft. bgs.

Based on information submitted with the NOI and Addendum, coverage under General Order Three appears appropriate for the ponds on the Sheep Springs Lease.

Provision 4.b of General Order Three must still be satisfied. Specifically, Incremental must comply with the timeline outlined in General Order Three Provision 4.b. and obtain a Basin Plan amendment to de-designate the beneficial uses of underlying groundwater.

Based on these conditions, as per Title 23, California Code of Regulations, section 2200, the discharge shall be given a TTWQ (threat to water quality) and CPLX (complexity rating) of 3C. Incremental is responsible for annual fees associated with this rating unless conditions or regulatory policies change.