



Central Valley Regional Water Quality Control Board

9 July 2021

Chad Hathaway
President and Owner
Hathaway, LLC
4205 Atlas Court
Bakersfield CA 93308

CERTIFIED MAIL
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NOTICE OF APPLICABILITY, ORDER NUMBER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER THREE, HATHAWAY, LLC, FEE A AND FEE B LEASES, DEVILS DEN OIL FIELD, KERN COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a letter dated 5 August 2020 from Hathaway, LLC (Hathaway) that included a Notice of Intent (NOI) dated 4 August 2020 and titled "Technical Report for NOI..." and a completed "Application/Report of Waste Discharge" (Form 200). Hathaway provided a second document dated 22 March 2021 and titled, "*RE: Response to Questions*," in response to a list of questions regarding the NOI that Central Valley Water Board staff emailed to Hathaway and their consultant, Burton R. Ellison. The NOI includes a request by Hathaway, LLC to obtain regulatory coverage under Order R5-2017-0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three (General Order Three), for the discharge of produced wastewater (discharge) into two unlined surface impoundments (ponds) on the Fee A Lease and into two unlined ponds on the Fee B Lease in the Devils Den Oil Field.

The Central Valley Water Board adopted Waste Discharge Requirements No 58-481 through 58-490 (WDRs) to regulate discharges of produced wastewater into ponds in the Devils Den Oil Field. WDRs No 58-487 cover the Fee A and Fee B leases (Facility). The Central Valley Water Board later issued Monitoring and Reporting Program No. R5-2016-0818 (MRP) to Hathaway for the Facility. Hathaway submitted the NOI in response to a Central Valley Water Board 13260 Order letter dated 10 January 2020, which indicated that the WDRs were outdated.

The NOI states that coverage under General Order Three is applicable to the discharges at the Facility because of unique surface and subsurface geologic features, and because there is no underlying groundwater or where groundwater exists, it is of poor quality that supports removal of beneficial uses through Basin Plan amendments.

This letter serves as formal notice that General Order Three is applicable based on available information to the ponds on the Fee A and Fee B Leases. General Order Number **R5-2017-0036-022** is hereby assigned to all produced wastewater discharges into the ponds. Hathaway should become familiar with all the requirements, time schedules, prohibitions, and provisions of General Order Three, and Monitoring and Reporting Program R5-2017-0036 (MRP). Monitoring and Reporting Program No. R5-2016-0818 is hereby rescinded. I intend to recommend that that the Central Valley Water Board rescind WDRs Number 58-487 as soon as possible.

As stated in California 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 Hathaway to continue the discharge. Failure to comply with the terms and conditions of General Three or to prevent conditions that create or threaten to create pollution or nuisance or cause degradation of groundwater, 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 and the State Water Resources Control Board (State Water Board), and regional stakeholders began the joint effort to address nitrates and salinity 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 Basin Plan that would necessitate the re-opening of General Order Three.

FACILITY SPECIFIC REQUIREMENTS

1. The required annual fee specified in the annual billing from the State Water Board shall be paid until coverage for the Facility under General Order Three is officially terminated. Hathaway shall notify the Central Valley Water Board in writing to request termination.
2. Hathaway shall maintain exclusive control of the discharge and shall comply with all the requirements and timelines of General Order Three and the MRP.
3. Hathaway shall operate and maintain the ponds sufficiently to protect the integrity of containment and prevent overtopping and/or structural failure. Discharges not authorized by General Order Three and not described in the NOI should be reported to the Central Valley Water Board. The discharge of wastes other than those described in the NOI is prohibited. If the method of waste disposal changes, Hathaway shall submit a Report of Waste Discharge.

4. 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 NOI indicates the maximum monthly average discharge volumes to the ponds on the Fee A and Fee B Leases was 2,764 and 979 barrels per month, respectively.

The maximum monthly discharge into the ponds shall not exceed 2,764 barrels for the Fee A Lease and 979 barrels for the Fee B Lease (one barrel is equivalent to approximately 42 gallons). Any increase in discharge volume that would exceed the monthly average flow constitutes an expansion of the Facility and would require an evaluation under the California Environmental Quality Act (CEQA). Additionally, the discharge to the ponds shall not exceed their design capacity with two feet of freeboard.

5. **By 13 September 2021** and pursuant to Water Code Section 13267, Hathaway shall submit a technical report that includes a water balance capacity analysis demonstrating that the as-built hydraulic capacity of the facility is consistent with the flow limits while taking into account a total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. The water balance analysis needs to consider the following: 1) a required minimum of two feet freeboard in each pond at all times, 2) historical pan evaporation rates, and 3) projected long term percolations rates. Reports containing engineering evaluations and judgements must be signed and stamped in accordance with California Business and Professions Code, section 6735.

The Central Valley Water Board is concerned about potential threats to waters of the State that may be suitable as a drinking water supply or may have other designated beneficial uses. The need to understand potential threats to human health and water quality justifies the need for the information required by this Notice.

Based on the nature and possible consequences of the discharges of waste, the burden of providing the required information, bears a reasonable relationship to the need for the technical report, and the benefits to be obtained. Hathaway is required to submit this information and report because it is the operator of the Leases.

6. **By 13 September 2021**, Hathaway 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. Hathaway shall include with the certification the following: 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. Hathaway may use an engineered alternative if approved in writing by the Central Valley Water Board's Executive Officer.

7. **By 13 September 2021**, Hathaway shall inform the Central Valley Water Board, in writing as to whether the ponds accept produced water from any wells which have undergone a well stimulation treatment (e.g., hydraulic fracturing, acid fracturing, and acid matrix stimulation) on the Smith and Grace-Cairns Leases. The NOI indicates that Hathaway has not performed well stimulation treatments in wells on the Fee A and B leases and does not indicate whether Hathaway or a prior operator has performed stimulation treatments in wells on the nearby LeBaron, Smith and Grace Cairns Leases. The NOI indicates that Hathaway discharges into the Fee A and B Lease ponds produced wastewater from the LeBaron, Smith and Grace Cairns Leases.

If the ponds accept produced water from a well that has undergone a well stimulation treatment, then Hathaway shall comply with the compliance schedule provided in Provision E.8 of General Order Three. Provision E.8.a requires Hathaway, if the ponds accept produced water from a well that has undergone a well stimulation treatment, to submit by **7 October 2021** 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 alternative disposal method for wastewater discharges from wells with a history of or may later receive a well stimulation treatment.

8. If Hathaway intends to apply for use of produced water for dust control, a proposed management plan, as described in Provision E.G of General Order Three, must be submitted at least **90 days prior** to the anticipated discharges.
9. If Hathaway decides to reuse Facility solids for road mix on the Fee A and Fee B Leases, Hathaway shall submit a solids management plan, as described in Provision E.7 of General Order Three. Hathaway shall submit a solids management plan for review at least **180 days prior** to any solids reuse. The Central Valley Water Board's Executive Officer must approve the solids management plan.
10. **By 13 September 2021**, Hathaway must provide sample analysis results from discharged fluid from the Fee B, Smith, and Grace Cairns leases. If the leases are not currently producing discharged fluid, then Hathaway must provide an update and sample as soon as the discharge resumes.

Failure to comply with the requirements of General Order Three and the MRP could result in an enforcement action authorized by provisions of the California Water Code. A [copy of General Order Three](#) is included in the enclosure of this letter. A copy can also be found online at:

(https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2017-0036.pdf)

Hathaway shall comply with the Central Valley Water Board's Standard Provision and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991 (Standard Provisions). A [copy of the Standard Provisions](#) is included with the enclosures of this letter. A copy can also be found online at:

(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 the California 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 PM, 30 days after the date of this NOA, 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 PM on the next business day.

SUBMISSIONS

Documents associated with the Facility, that are less than 50 MB must be sent via electronic mail to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50 MB or larger can be mailed to the Central Valley Water Board office at 1685 E Street, Fresno, CA 93706. Hathaway shall submit electronic PDF 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). When applicable, Hathaway shall submit analytical data in both PDF and EDF (electronic data files) of the discharge to GeoTracker. Electronic submissions shall comply with GeoTracker standards and procedures. Uploads to GeoTracker shall be completed on or prior to the due date. The GeoTracker site Global I.D. number that is associated with the Facility is: **L10002445401**.

Hathaway, LLC
Notice of Applicability – General Order Three
Fee A and Fee B Leases
Devils Den Oil Field
Kern County

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9 July 2021

Please review the enclosed memorandum for more information. If you have any questions regarding this matter, you may contact Joey Sisk at (559) 445-5975 or by email at: Joey.Sisk@Waterboards.ca.gov.



for:

Patrick Pulupa
Executive Officer

Enclosures: 9 July 2021 Memorandum, General Order Three, 1991 Standard Provisions

cc: Mark Ghann-Amoah, Deputy for the Inland District Division of Oil Gas and Geothermal Resources, Bakersfield (NOA and Memorandum only, via email)
Burton R. Ellison, Consultant to Hathaway LLC, 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

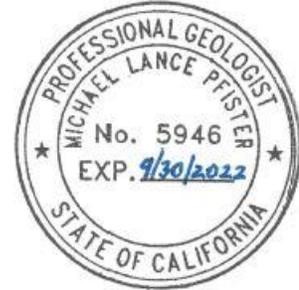
TO: Clay Rogers
Assistant Executive Officer

W. Dale Harvey
Supervising Engineer
RCE No. 55628

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

Joey M. Sisk 
Water Resource Control Engineer
RCE No. 90249

DATE: 9 July 2021



SUBJECT: REVIEW OF NOTICE OF INTENT, GENERAL ORDER THREE, R5-2017-0036, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR OIL FIELD DISCHARGES TO LAND, HATHAWAY, LLC, FEE A AND FEE B LEASES, DEVILS DEN OIL FIELD, KERN COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a document dated August 2020 and titled, “*Re: Notice of Intent, Waste Discharge Requirements, General Order Three for Oil Field Discharges to Land Hathaway LLC, “Fee” A and “Fee” B Lease Ponds, Devils Den Oil Field, Old Area GeoTracker Site Global ID L10002445401 (“Fee” A Lease), and L10003759005 (“Fee” B Lease).*” The Notice of Intent (NOI) summarizes a request by Hathaway, LLC (Hathaway or Discharger) to obtain regulatory coverage under Order R5-2017-0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three (General Order Three), for surface discharges at the Fee A and Fee B Leases in the Devils Den Oil Field (Fee A and Fee B Leases or Facility). Hathaway provided a second document dated 22 March 2021 and titled, “*RE: Response to Questions,*” in response to a list of questions regarding the NOI that Central Valley Water Board staff emailed to Hathaway and their consultant, Burton R. Ellison. A summary of the NOI and a review by Central Valley Water Board staff follow. Mr. Ellison, a California-licensed professional geologist, signed and sealed the documents.

General Order Three regulates discharges where: 1) oil field produced wastewater (produced water) 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), industrial service supply (IND), or industrial process supply (PRO).

The Facility is approximately eighteen miles north-west of Lost Hills, in Section 25, T25S, R18E, MDB&M.

Regulatory History

On 21 November 1958, the Central Valley Water Board adopted Waste Discharge Requirements No. 58-487 (WDRs). The WDRs applied to multiple oil field operators for surface discharges of produced water in the Devils Den Oil Field. On 10 January 2020, the Central Valley Water Board issued a 13260 Order to Hathaway stating that the WDRs were outdated and required Hathaway to submit a NOI for coverage under one of three Waste Discharge Requirements, General Orders for Oil Field Discharges to Land (General Orders); or a new Report of Waste Discharge (RWD). On 21 May 2020, the Central Valley Water Board issued a Notice of Violation to Hathaway for failure to submit a NOI or RWD for the Facility. Thereafter Hathaway submitted the NOI.

On 7 July 2016, the Central Valley Water Board issued Monitoring and Reporting Program No. R5-2016-0818 (MRP) to Hathaway for the Facility. Central Valley Water Board staff was unable to locate any monitoring reports submitted in response to the MRP.

Discharge Characteristics

The two leases utilize four unlined surface impoundments (ponds; two on each lease) for the disposal of oilfield produced wastewater (discharge). The NOI indicates that Hathaway transports produced wastewater from oil production to the ponds through pipelines and trucking. The Edmund G. Brown Aqueduct bisects the two leases. The Response to Questions states that the construction dates of the ponds is unknown but are the only known wastewater disposal locations on the leases and therefore have likely existed since oil production on them began. Hathaway also operates the adjacent LeBaron Lease, and nearby Smith and Grace-Cairns Leases. Hathaway acquired the Smith Lease in 2018 and the Grace-Cairns Lease in October 2014. The NOI indicates that produced wastewater from the LeBaron Lease is discharged into the ponds on the Fee A lease, that produced wastewater from the Smith Lease is periodically trucked to

the Fee A Lease ponds for disposal, and that the produced wastewater from Grace Cairns Lease is trucked to the Fee B Lease ponds for disposal.

The NOI describes that recovery methods are through conventional means and that there is no enhanced oil recovery on the leases that contribute to the discharge.

Ponds 1 and 2 are on the Fee A Lease, and Ponds 2 and 3 are on the Fee B Lease. Approximate pond dimensions follow:

Pond Name	Length (feet)	Width (feet)	Depth (feet)	Volume with Two Feet of Free Board (cubic feet)
1	50	15	6	3,000
2	80	30	8	14,400
3	50	15	5	2,250
4	80	30	8	14,400

To obtain coverage under General Order Three, a discharger needs to submit information on flow data and identify the maximum monthly average produced wastewater discharge volume to ponds that occurred in the ten years prior to 26 November 2014. Hathaway submitted annual flow data from 2004 to 2014 and monthly flow data for 2012. Hathaway provided additional oil and produced wastewater production data from 2013 to 2019. The Smith Lease discharges to the Fee A Lease ponds had an average discharge of 163 barrels a month over the period that Hathaway has operated the lease (April 2018 to June 2020). The Grace-Cairns Lease discharges to the Fee B Lease ponds had an average discharge of approximately 100 barrels a month over the period that Hathaway has operated the lease (October 2014 to June 2020). The LeBaron Lease discharges to the Fee A Lease ponds are included in the Fee A Lease discharge totals between 2004 and 2014.

The Response to Questions estimates that a total of approximately 1,466,698 barrels of produced wastewater has been discharged to Ponds 1 and 2. It also estimates that approximately 505,091 barrels of produced wastewater has been discharged to ponds 3 and 4.

The Facility's annual flow data in barrels (42 gallons per barrel) from 2004 to 2014 follows:

Year	Fee A Lease Annual Total	Fee A Lease Monthly Average	Fee B Lease Annual Total	Fee B Lease Monthly Average
2004	29,164	2430	11,404	950
2005	22,803	2279	11,049	920
2006	17,003	1417	8,821	735
2007	17,662	1472	11,751	979
2008	19,483	1624	7,601	633
2009	28,858	2405	6,534	545
2010	26,740	2228	10,129	844
2011	29,777	2228	8,479	707
2012	33,173	2764	11,201	933
2013	30,044	2504	10,689	890
2014	27,646	2304	10,086	840

The Facility's monthly flow data in barrels for 2012 follows:

Month	Fee A Lease Monthly Total for 2012	Fee B Lease Monthly Total for 2012
January	3,082	1,001
February	2,867	613
March	2,912	710
April	2,634	968
May	2,227	1,001
June	2,116	968
July	2,117	1,001
August	3,082	1,001
September	2,986	968
October	3,082	1,001
November	2,986	968
December	3,082	1,001

Discharge Specifications, Item B.2., General Order Three states, *"The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to the ponds 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."* Based on the flow data submitted by Hathaway, the maximum monthly discharge volumes to the ponds on the Fee A and Fee B Leases should be 2,764 and 979 barrels per month, respectively.

In addition, Hathaway should not exceed the design capacity of the ponds with adequate freeboard, unless a California-licensed civil engineer certifies (based on

design, construction, and conditions of operation and maintenance) that less freeboard is adequate. General Order Three specifies the operating freeboard should never be less than two feet. With two feet of freeboard, the capacity of the ponds on the Fee A and Fee B Leases is approximately 17,400 and 16,650 cubic feet, respectively. Hathaway should submit a water balance capacity analysis, showing that the ponds' capacity is adequate and consistent with the flow limits based on total annual precipitation using a return period of 100 years.

Produced Wastewater Quality

Hathaway representatives collected water samples from the inlet of Pond 2 on 3 March 2020. Constituents analyzed as a part of the MRP's sampling program include general minerals, polycyclic aromatic hydrocarbons, volatile organic carbons, radionuclides, and isotopes. Selected analytical results submitted by Hathaway are in the following table:

Constituent	3 March 2020 Analytical Results
Specific Conductance	24,000 (micro siemens per centimeter)
Boron	9.7 milligrams per liter (mg/l)
Chloride	7,100 mg/l
Sodium	5,800 mg/l
Total Dissolved Solids	15,000 mg/l
Calcium	64 mg/l

Dust Control and Solid Material Reuse

General Order Three allows for the reuse of solids impacted by the discharge under certain conditions. Regarding solids generated at the Facility, the NOI describes that the facility does not generate solid waste.

Regarding the reuse of produced water for dust control, General Order Three states, *"Application of produced wastewater at the Facility property for dust control or construction activities shall be at reasonable rates to preclude creation of a nuisance and unreasonable degradation of groundwater or surface water. Applied wastewater shall not be allowed to pool onsite or runoff from the area intended for dust control."*

Regarding dust control, the NOI states, *"Hathaway LLC does not plan to apply for dust control activities at this time."* If Hathaway decides to use produced water as dust control or in construction activities at the Facility, then Hathaway should provide a proposed management plan for such activities, as described in Provision E.6. in General Order Three. Hathaway must submit the produced wastewater management

plan to the Central Valley Water Board's Executive Officer at least 90 days prior to the anticipated discharges. Discharges should not occur without Executive Officer written approval of the management plan.

Storm Water Management

The NOI states the following regarding storm water:

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 "Fee" A and "Fee" B facilities. Therefore, the "Fee A" and "Fee" B facilities are exempt from the Industrial Storm Water General Permit.

As a result of the exemption from the Industrial Storm Water General Permit, Hathaway LLC 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 Facility may need coverage under NPDES General Permit CAS000001. There does not appear to be a need to obtain coverage under NPDES General Permit CAS000001 currently.

Hydrogeologic Conditions

The Devils Den Oil Field lies just west of the San Joaquin Valley. The San Joaquin Valley aquifer contains water supply wells used for agricultural irrigation at locations east of the ponds. GeoTracker identifies the nearest public water supply well as being approximately 3.5 miles to the north-east. The Response to Questions describes that the nearest water supply well is located approximately 2.5 miles to the east.

Hathaway states that in the NOI that "there are numerous well logs from the oil wells that indicate there is no groundwater in the Alluvium and the first fluids encountered were oil or water associated with oil." The NOI describes that the Alluvium, on which the ponds are constructed, as relatively thin and that the underlying Media Shale outcrops approximately 90 feet north of Pond 1. The NOI states:

If groundwater were to exist in the area, it would be encountered in the Alluvium by the numerous oil wells in the area. The absence of groundwater in the area was obvious as a result of early cable tool drilling in the area. As referenced in

the Summary of Operation California Oil Fields, Vol. 9, No. 12, 1924, "...there is no top water here" so many of the wells have no casing or ran only 10 to 20 feet of conductor pipe. The first subsurface fluids encountered was oil.

The NOI states that driller's logs and electric logs from adjacent oil wells were reviewed. The NOI's Exhibit 19 shows that ten wells have no alluvium water sands, and four wells have alluvium water sands. The NOI identifies the oil well with American Petroleum Institute (API) number 02939775 as the nearest to the ponds showing alluvial water sands. It is approximately 2,000 feet to the south-east of the nearest pond (Pond 4). The NOI describes the alluvial water sand found as being thin and containing brackish water. The NOI provides salinity calculations for the alluvial water sands found in another well (API number 402939859) that has an electric log dated 18 August 1956. The NOI describes it as the only one of the four wells identified with alluvial water sands that has an electric log. The well is approximately 6,000 feet to the south-east of the nearest pond (Pond 4). The estimated concentration of sodium chloride in groundwater is 9,000 mg/L.

The NOI describes the presence of a nearby "salt-water spring" and attributes its presence to a fault. The "salt-water spring" is approximately 0.25 miles to the north-east of the ponds and near the trace of a fault. The Response to Questions describes that the source of the "salt-water spring" fluid is unknown. The source is described to possibly be any of several underlying formations, with the Agua and Lower Santos formations being the most likely. The fault is identified as providing the pathway for fluid to reach the surface. The Response to Questions states the following regarding the spring fluid quality:

The saltwater from the spring was sampled on April 23, 1953 and found to contain 10,900 ppm Total Dissolved Solids and a Specific Conductance of 16,100 micro-mhos. This suggests the source of the spring is from the marine sediments below the alluvium layer.

Cross-sections provided with the NOI indicate that the Alluvium-Media Shale contact dips to the east and the north-east. The Response to Questions document describes that the fault and a nearby topographic ridge provide a barrier to fluid migration.

The NOI states that Hathaway has conducted no soil sampling at the site and references an included 30 July 2003 report by Thomas Ladd titled, "*Assessment for Oil Field Wastewater Discharge Pond, Marlyn Company.*" Thomas Ladd's report states the following:

BSK prepared two reports for Provost & Pritchard, Inc. of Bakersfield, California for the purpose of evaluating a Berenda Mesa dam site proposal within the Devils Den Oil Field. The two reports are Phase I Environmental Assessment Report,

December 6, 2002 and Geotechnical Feasibility Study, Berenda Mesa Forebay Dam Site, April 7, 2003, both made available to the author by Provost & Prichard, Inc.

The NOI indicates that BSK drilled 10 borings to a depth of approximately 70 feet each to evaluate the subsurface geologic conditions. Groundwater water was not encountered in the borings. A boring location map (Exhibit 4) shows the boring locations and the proposed dam site relative to the Marlyn Company's leases (The Fee A and B Leases). The NOI indicates that the borings were associated with the possible placement of a dam at the project site.

A copy of Thomas Ladd's report is in the NOI's Appendix 11, but the two BSK reports cited by Mr. Ladd are not included. A figure on page 20 of the NOI indicates that the northern most boring was drilled about one mile south of the Fee B Lease ponds. The Response to Questions states that conditions between the ponds and boring locations are similar. It describes that the borings are located in the lower plain section where the alluvial layer thickens from approximately 60 feet thick at ponds 3 and 4 to approximately 100 feet thick at the borings. It further describes that the 70-foot-deep borings would not fully have penetrated the alluvium, but nearby oil wells did not find groundwater in the alluvial layer.

Exhibit 19 of the NOI depicts a "Proposed Boundary Modification" line just east of the ponds and a "Proposed Modified Boundary Adjustment" further to the east of the ponds. The Response to Questions clarifies that these lines depict the boundaries proposed in a "Basin Boundary Modification (BBM) request submitted to the Department of Water Resources in September 2018 by West Kern Water District." The Response to Questions describes that DWR denied the original BBM due to insufficient evidence for concurrence. A 2019 addendum to the BBM removed the Devils Den Oil Field area from the proposal.

A California Division of Oil, Gas and Geothermal Resources (now CalGEM) document dated 1973 and titled "California Oil and Gas Fields, Volume 1, North and East Central California" identifies oil producing zones in the "Devils Den Oil Field, Old Area." The ponds are within an area depicted in the document. Oil producing zones identified are: Santos (average depth = 200 feet), Salt Creek (average depth = 200 feet), Tumey (average depth = 500 feet), and Point of Rocks (average depth = 600 feet). CalGEM depicts the zones as dipping to the northeast and shows that an angular unconformity is present between the alluvium and underlying oil producing zones.

Water Balance and Pond Capacity Analysis Requirements

The NOI does not include a sufficient water balance capacity analysis. The water balance information provided only estimates the total volume percolated based on

average precipitation rates but does not evaluate capacity. The NOI describes that adequate capacity was determined from aerial imagery. Hathaway needs to provide a capacity analysis demonstrating that the as-built hydraulic capacity is consistent with the flow limits based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Reports containing engineering evaluations and judgements must be signed and stamped in accordance with California Business and Professions Code, section 6735.

Well Stimulation Treatment Fluids

General Order Three prohibits the discharge of fluids used in a well stimulation treatment, as defined by California Code of Regulations, title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation). This includes the discharge of produced water from wells containing well stimulation treatment fluids, except as provided by Provision E.8. of General Order Three. The NOI states that Hathaway has not stimulated wells on the Fee A or B leases. Hathaway does not identify whether well stimulation treatments have been conducted in wells on the other leases that contribute to the discharge to the ponds. Hathaway needs to identify if any wells have been stimulated on the LeBaron, Smith and Grace-Cairns Leases as per CCR title 14, section 1761.

Flow Volume Monitoring

The NOI does not identify or propose flow monitoring devices or sampling locations for determining compliance with the General Order. Hathaway needs to identify how it will demonstrate compliance with the General Order.

Provision Four of General Order Three

Provision Four of General Order Three (Provision 4) states that the Discharger should either:

- a) Provide by, as directed in the NOA issued for coverage under this General Order, the results of a hydrogeological investigation demonstrating 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. Upon the written concurrence of the investigation results by the Executive Officer, this provision should be considered satisfied, or
- b) If there is first encountered groundwater underlying the Facility or the Executive Officer does not concur with the results of the investigation in Provision E.4.a., above, the Discharger should demonstrate that the natural background quality for the Facility meets the Sources of Drinking Water Policy exception criteria and/or

parallel exception criteria outlined in General Order Three and thus the current Basin Plan groundwater beneficial uses are eligible for de-designation in accordance with the compliance schedule in General Order Three.

The NOI on page 25 states that “there is no groundwater present at the Fee Lease or surrounding area.” The Response to Comments states that the fault and a nearby topographic ridge provide a barrier to fluid migration. A volumetric analysis is provided in the Response to Questions. It estimates that the total volume of water discharged to ponds 1 and 2 would fill a radius of between 380 feet (“if you assume the water percolates down 50 feet and a porosity of 30 percent”) and 736 feet (“if you assume the water only percolates down 20 feet”). It estimates the volume discharged to ponds 3 and 4 would fill a radius of between 109 feet (“if you assume the water percolates down 50 feet”) and 212 feet (“if you assume the water only percolates down 20 feet”).

Waste Constituents

Hathaway did not collect produced wastewater samples from the Fee Lease B, LeBaron Lease, Smith Lease, or Grace Cairns Lease, only from the Fee Lease A. The NOI describes that Hathaway did not collect wastewater samples on the Fee B Lease due to the wells being “shut-in due to low oil prices.” The NOI states that Hathaway will collect samples when production from the lease resumes. Quarterly monitoring reports need to either provide sampling results if discharges resume, or if no discharge is occurring, provide an update on the status. Hathaway needs to collect samples if the discharge into the Fee B Lease ponds resumes.

The NOI states the following regarding collection of water samples from discharge sources outside the Fee A and Fee B Leases:

Ponds 1 and 2 receive produced water from the Smith Lease and Ponds 3 and 4 receive produced water from the Grace Cairns Lease. A water analysis and analytical data for these sources is not available at this time.

Hathaway needs to collect representative samples from the sources and analyze them for the required constituents and provide the results when available.

Staff Conclusions

Based on information submitted with the NOI and the representations made by the Discharger’s consultant, coverage under General Order Three appears appropriate for the Lease.