



Central Valley Regional Water Quality Control Board

24 March 2021

Mr. Ron Engelberg
25 Hill Properties, Inc.
7026 Darnoch Way
West Hills, CA 91307

CERTIFIED MAIL
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NOTICE OF APPLICABILITY

CENTRAL VALLEY WATER BOARD VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER THREE, 25 HILL PROPERTIES, INC, JAMESON TRUST, VIRGINIA LANDS, AND B-ZONE (SHELL) LEASES, MIDWAY SUNSET OIL FIELD, KERN COUNTY

25 Hill Properties Incorporated (25 Hill) operates the Jameson Trust Lease, Virginia Lands Lease, and B-Zone (Shell) Lease (Leases) in the Midway Sunset Oil Field. Each of the Leases utilizes one unlined surface impoundment (pond(s)) for the disposal of oil field produced wastewater via evaporation and percolation (discharge). On 21 July 2020, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff (Staff) received a technical report titled *Notice of Intent, 25 Hill Properties, Jameson Trust, Virginia Lands, and the B-Zone (Shell) Leases, Midway-Sunset Field* (NOI) 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 Leases.

The discharge percolates from the ponds into unconsolidated alluvial sediments and Tulare Formation sediments in the Midway Sunset Oil Field. The NOI states that the Leases have 300 to 400 feet of unsaturated “air sands” overlying unproductive oil and fluid bearing Tulare Formation sands. The NOI states that there is no “top water” beneath the Leases because the fluids in the unproductive sands contain petroleum. The NOI suggests that there is no usable groundwater beneath the Leases. Based on this assessment, coverage under General Order Three appears to be appropriate for discharges to the ponds.

This letter serves as formal notice that General Order Three is applicable to discharges of produced water to the ponds (Notice of Applicability or NOA). General Order **Number R5-2017-0036-019** is hereby assigned to all produced water discharges into the following ponds:

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

| Pond Name | Length (feet) | Width (feet) | Depth (feet) | Total Capacity with Two Feet of Freeboard (cubic feet) |
|------------------|----------------------|---------------------|---------------------|---|
| Jameson Trust | 100 | 60 | 10 | 48,000 |
| Virginia Lands | 150 | 50 | 6 | 30,000 |
| B-Zone | 60 | 20 | 6 | 4,800 |

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 25 Hill to continue the discharge. Failure 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 requirements of General Order Three, as well as prohibit further discharge.

On 31 May 2018, the Central Valley Water Board adopted the Salt and Nitrate Control Program Basin Plan Amendments for the Sacramento and San Joaquin River Basin Plan and Tulare Lake Basin Plan in Central Valley Water Board Resolution No. R5-2018-0034 (Salt and Nitrate Control Program). The Salt and Nitrate Control Program is designed to address both legacy and ongoing salt and nitrate accumulation issues. It also establishes a prioritized Nitrate Control Program for discharges to groundwater and a phased Salt Control Program for discharges to surface water and groundwater throughout the Central Valley. On 16 October 2019, the State Water Resources Control Board (State Water Board) approved the Salt and Nitrate Control Program, and the Office of Administrative Law (OAL) approved the Basin Plan Amendments with an effective date of 17 January 2020. with direction to provide targeted revisions within one year of the effective date. For those components subject to United States Environmental Protection Agency (USEPA) approval, the effective date is 2 November 2020, the date of USEPA Approval. On 10 December 2020, the Central Valley Water Board adopted targeted revisions to the Salt and Nitrate Control Program directed by the State Water Board. The State Water Board is currently considering approval of the revisions, and the revisions will be effective upon OAL approval and USEPA approval, as necessary. The Basin Plan Amendments may 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 Leases under General Order Three is officially terminated. 25 Hill shall notify the Central Valley Water Board in writing to request termination.
2. Monitoring and Reporting Program No. R5-2017-0036 (MRP) is incorporated into General Order Three. The requirements of MRP include regular facility monitoring, produced water sampling, and reporting. 25 Hill should review the MRP and become familiar with the requirements therein.

3. 25 Hill shall maintain exclusive control of the discharge and shall comply with all the requirements and timelines of General Order Three and the MRP.
4. 25 Hill 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, 25 Hill shall submit a Report of Waste Discharge.
5. 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 states that the maximum monthly average discharge to the Jameson Trust Lease pond was approximately 3,789 barrels, to the Virginia Lands Lease pond was approximately 693 barrels, and to the B-Zone Lease pond was approximately 193 barrels (one barrel is equivalent to approximately 42 gallons).

Therefore, the maximum monthly average discharge into the ponds shall not exceed:

- a. 3,789 barrels to the Jameson Trust pond,
- b. 693 barrels for the Virginia Lands pond, and
- c. 193 barrels for the B-Zone ponds.

Any increase in discharge volume that would exceed the flow limits above would constitute 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.

6. As required in Discharge Specifications, Item B.2., the discharge flow also shall not exceed the maximum design flow of the Facility's limiting unit. Based on the limitations of the pond storage capacity balance presented in the NOI, as discussed in the attached 11 March 2021 Central Valley Water Board Staff Memorandum, the Jameson Trust Lease pond may not have enough capacity to receive on a continuous basis the maximum monthly average discharge of 3,789 barrels prescribed in Discharge Specific Requirement 5.a., above. Pursuant to Water Code Section 13267, 25 Hill is required to submit by **24 May 2021**, a technical report in the form of an engineering water balance demonstrating the reasonable monthly maximum disposal capacity of the Jameson Trust pond. The water balance should consider inflow to the pond, precipitation associated with a 100-year wet year distributed according to monthly rainfall patterns, monthly evaporation and infiltration rates, and a required minimum of two feet freeboard

- in the pond at all times. Following Executive Officer approval of the water balance technical report, Facility Specific Requirement 5.a., may be amended to reflect the design capacity of the Jameson Trust pond. Absent submittal of a complete engineering water balance by the above date, Facility Specific Requirement 5.a., may be reduced to reflect a flow consistent with Central Valley Water Board staff's best professional judgment based on the information provided in the NOI; absent additional information, this value is a maximum of 1,335 barrels monthly.
7. Provision E.3 of General Order Three requires acceptable flow meters to be installed at a location or locations to ensure the accurate measurement of all discharge flows. The alternative flow measurement method proposed by 25 Hill and described in the attached 11 March 2021 Central Valley Water Board Staff Memorandum is acceptable.
 8. 25 Hill indicated that oil is produced by primary recovery only and no individual well stimulation activities are performed. 25 Hill shall inform the Central Valley Water Board, in writing if the ponds start to accept produced water from any wells which have undergone a well stimulation treatment (e.g., hydraulic fracturing, acid fracturing, and acid matrix stimulation). If the ponds accept produced water from a well that has undergone a well stimulation treatment, then 25 Hill shall comply with the compliance schedule provided in Provision E.8 of General Order Three. Well stimulation treatment is defined by California Code of Regulations (CCR) title 14, section 1761.
 9. Order No. 2014-0057-DWQ (NPDES General Permit CAS000001) specifies requirements for discharges of storm water associated with industrial activities. 25 Hill indicated that the Leases are exempt from the requirement to obtain coverage under NPDES General Permit.
 10. As described above, the Central Valley Water Board adopted the Salt and Nitrate Control Program in 2018. The program and accompanying basin plan amendments went into effect on 17 January 2020. The State Water Board is currently considering approval of targeted revisions to the Salt and Nitrate Control Program adopted by Central Valley Water Board on 10 December 2020. 25 Hill shall comply with all Notices to Comply issued to 25 Hill pursuant to the Salt and Nitrate Control Program and future revisions.
 11. Provision 4 of General Order Three (Provision 4) establishes a five-year process, during which 25 Hill must 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 this General Order and thus the current beneficial uses, as designated in the Basin Plan are eligible for de-designation, and obtain a Basin Plan amendment de-designating those uses. The language in the Provision needs to be revised to reflect the adoption of the Salt and Nitrate Control Program. Nonetheless, 25 Hill needs to proceed with the Basin Plan

amendment process outlined in Provision 4 and submit: 1) by **22 July 2021**, an outline of the Basin Plan Amendment (BPA) Work Plan for de-designation of beneficial uses to the Central Valley Water Board for review.; 2) by **24 January 2022**, a completed BPA Work Plan to the Central Valley Water Board for review; and 3) by **25 March 2024**, 25 Hill must submit a final technical report to the Central Valley Water Board for review.

25 Hill may work with other pond operators or industry groups (e.g., CIPA) to obtain a BPA covering the region of their respective ponds. If 25 Hill intends to participate with other pond operators or industry groups to obtain the necessary basin plan amendment, it shall provide to the Central Valley Water Board written notice of its intent and evidence of participation by **24 July 2021**.

25 Hill should note that subsequent tasks require review of the proposed BPA by stakeholders, the public, the State Water Resources Control Board, and the Office of Administrative Law.

12. If 25 Hill 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.
13. If 25 Hill decides to reuse solids for road mix on the Leases, then 25 Hill shall submit a solids management plan, as described in Provision E.7 of General Order Three. 25 Hill must submit a solids management plan for review at least **180 days prior** to any solids reuse. The solids management plan must be approved by the Central Valley Water Board's Executive Officer.

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 on the [State Water Board's Website](#).

Technical and monitoring reports required in this NOA and by General Order Three are required pursuant to Water Code section 13267. Pursuant to Water Code section 13268, any person failing to submit a technical report required by Water Code section 13267 is subject to the potential assessment of administrative civil liability in an amount of \$1,000 per each date the report is late or substantially incomplete.

Central Valley Water Board staff estimate that the technical report required by Facility Specific Requirement 6 above will cost less than \$750; this cost is reasonable considering the need to better demonstrate the disposal capacity of the Jameson Trust Lease pond and determine the appropriate maximum monthly average discharge that will ensure that discharge does not exceed the maximum design flow.

25 Hill 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 on the [State Water Board's website](#).

Additionally, by copy of this letter Cleanup and Abatement Order No. R5-2015-0745 is rescinded.

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 Leases, including monitoring reports, investigation results, and other documents, that are less than 50 MB can 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.

25 Hill 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, 25 Hill shall submit analytical data in both PDF and EDF (electronic data files) of the discharge to GeoTracker. Electronic submittals 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. numbers associated with this NOA follow: **Jameson Trust Lease – T10000006947, Virginia Lands Lease – T10000006952, B-Zone (Shell) – T10000006950**

Please review the enclosed documents. If you have any questions regarding this matter, you may contact Omar O. Erekat at (559) 488-4382 or by email at: omar.erekat@waterboards.ca.gov.

Original Signed by Clay L. Rodgers for:
Patrick Pulupa,
Executive Officer

Enclosures: 11 March 2021 Memorandum
Review of Notice of Intent Memorandum by Staff of Central Valley Water
Board
General Order Three
1991 Standard Provisions

cc: Mark Ghann-Amoah, District Deputy for the Inland District, CalGEM,
Bakersfield (without enclosures via email)

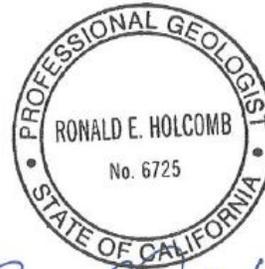
Central Valley Regional Water Quality Control Board

TO: W. Dale Harvey
Supervising Engineer

Clay Rodgers
Assistant Executive Officer

FROM: Ronald E. Holcomb
Senior Engineer Geologist
PG No. 6725

Omar O. Erekat
Water Resource Control Engineer
RCE No. 89638



A handwritten signature in blue ink that reads "Ronald E. Holcomb".

DATE: 11 March 2021

SUBJECT: REVIEW OF NOTICE OF INTENT, GENERAL ORDER THREE, R5-2017-0036, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR OIL FIELD DISCHARGES TO LAND, 25 HILL PROPERTIES INC, JAMESON TRUST, VIRGINIA LANDS, AND B-ZONE (SHELL) LEASES, MIDWAY SUNSET OIL FIELD, KERN COUNTY

25 Hill Properties Incorporated (25 Hill) operates the Jameson Trust Lease, Virginia Lands Lease, and B-Zone (Shell) Lease (Leases) in the Midway Sunset Oil Field. Each of the Leases utilizes one unlined surface impoundment (pond(s)) for the disposal of oil field produced wastewater via evaporation and percolation (discharge). The discharge is not currently regulated by Waste Discharge Requirements Order (WDRs). On 21 July 2020, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff (Staff) received a technical report titled *Notice of Intent, 25 Hill Properties, Jameson Trust, Virginia Lands, and the B-Zone (Shell) Leases, Midway-Sunset Field* (NOI) 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 Jameson Trust, Virginia Lands, and B-Zone (Shell) Leases in the Midway Sunset Oil Field (Leases). The NOI Report was prepared and submitted by Mark R. Magargee, a professional geologist registered in California, on behalf of 25 Hill. Mr. Magargee submitted an addendum

letter on 29 January 2021 supplementing the NOI Report. This memorandum contains a summary of the NOI Report and Staff's review.

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 designated in the Basin Plan, such as municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), or industrial process supply (PRO).

Regulatory History

The Leases are regulated by Cleanup and Abatement Order No. R5-2015-0745 (CAO) and Monitoring and Reporting Program No. R5-2015-0745, issued by the Central Valley Water Board on 1 December 2015. The CAO and accompanying MRP contain reporting requirements for ponds used for disposal of oil field produced wastewater. 25 Hill operates three such ponds, one at each of the Leases, as described above.

The CAO required the submission of a work plan by 1 February 2016, to assess whether the discharges can comply with applicable laws, policies, and regulations that would allow the issuance of WDRs. If it is determined that the discharges cannot comply with applicable laws, policies, and regulations, the CAO required the Discharger to cease discharge by 31 December 2016, a deadline later extended by the Central Valley Water Board Executive Officer to 7 August 2017. 25 Hill continued to use the ponds beyond the prescribed deadline. The Central Valley Water Board issued several notices of violation to 25 Hill for the continued unregulated discharge. The Central Valley Water Board issued an Administrative Civil Liability Complaint to 25 Hill on 11 February 2020 for not complying with the CAO or, alternatively, ceasing discharge. 25 Hill entered settlement negotiations with the Central Valley Water Board in March 2020 and submitted the NOI in July 2020. Staff's most recent inspection of the Lease occurred on 30 September 2020, during which Staff observed the ponds and associated infrastructure on the Leases.

SUBMITTED INFORMATION

Location

The Jameson Trust Lease is in the southwestern quarter of Section 24, T32S, R23E MDB&M, on assessor's parcels No. (APN) 039-030-31 and 039-030-33. The Virginia Lands Lease is in the northeastern quarter of Section 22, T32S, R23E MDB&M, on APN 198-180-23. The B-Zone (Shell) Lease is in the northwestern quarter of Section 22, T32S, R23E MDB&M, on APN 198-180-20. The Leases are south and southwest of Taft in Kern County.

Discharge Characteristics

Each Lease utilizes one pond for the disposal of oilfield produced wastewater. Produced wastewater is derived from fluid separation after production processes. Fluids from production processes include crude oil and produced wastewater. The fluids are separated in tanks and transported to the ponds through pipelines. Approximate pond dimensions follow:

| Pond Name | Length (feet) | Width (feet) | Depth (feet) | Volume with Two Feet of Free Board (cubic feet) |
|------------------|----------------------|---------------------|---------------------|--|
| Jameson Trust | 100 | 60 | 10 | 48,000* |
| Virginia Lands | 150 | 50 | 6 | 30,000* |
| B-Zone | 60 | 20 | 6 | 4,800* |

*The volumetric shapes of the ponds are assumed to be rectangular prisms for estimate simplicity. The actual volumetric shapes are expected to be inverted trapezoidal prisms.

To obtain coverage under General Order Three, a discharger needs to submit information on flow data. This data generally should include the maximum monthly average produced water discharge volume to ponds that occurred in the ten years prior to 26 November 2014. The NOI includes monthly discharge volume data in barrels (bbls) (one barrel is approximately 42 gallons) for the Leases from 1977 to 2015. The following table contains annual discharge totals for 2004 to 2014:

| Year | Jameson Trust Lease | Virginia Lands Lease | B-Zone Lease |
|-------------|----------------------------|-----------------------------|---------------------|
| 2004 | 9,808 | 1,322 | 341 |
| 2005 | 19,470 | 2,337 | 1,263 |
| 2006 | 21,144 | 1,175 | 611 |
| 2007 | 23,408 | 2,540 | 583 |
| 2008 | 26,409 | 2,077 | 443 |
| 2009 | 18,753 | 1,690 | 590 |
| 2010 | 17,167 | 1,008 | 173 |
| 2011 | 15,510 | 884 | 290 |
| 2012 | 15,112 | 834 | 300 |
| 2013 | 13,524 | 797 | 273 |
| 2014 | 11,785 | 809 | 284 |

The NOI states that the maximum monthly wastewater discharge to the Jameson Trust Lease pond was 3,789 barrels during February 2009. The maximum monthly wastewater discharge to the Virginia Lands Lease pond was 693 barrels during June 2008. The maximum monthly wastewater discharge to the B-Zone Lease pond was 193 barrels during March 2005.

Monitoring and Reporting Program R5-2017-0036 (MRP), which is a part of General Order Three, requires 25 Hill to conduct facility inspections, sample the discharges, and submit monitoring reports. The MRP is necessary to determine whether the discharges

and facilities are in compliance with General Order Three, as well as to characterize the discharges, and to ensure that no hazardous wastes are being generated on the Leases. On 9 March 2020, the ponds were sampled to characterize the discharges. Selected analytical results submitted with the NOI are summarized below:

| Constituent | Jameson Trust Lease | Virginia Lands Lease | B-Zone Lease |
|------------------------|---|-----------------------------|---------------------|
| Boron | 84 milligrams per liter (mg/l) | 17 mg/l | 110 mg/l |
| Chloride | 16,000 mg/l | 3,000 mg/l | 7,200 mg/l |
| Sodium | 8,700 mg/l | 1,900 mg/l | 7,900 mg/l |
| Total Dissolved Solids | 31,000 mg/l | 5,400 mg/l | 2,300 mg/l |
| Specific Conductance | 41,000 micro mohs per centimeter (umohs/cm) | 8,900 umohs/cm | 28,000 umohs/cm |

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 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.”*

25 Hill should not exceed the design capacity of the ponds with adequate freeboard. Unless a California registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, General Order Three specifies that the operating freeboard should never be less than two feet. With two feet of freeboard, the capacity of the Jameson Trust pond is approximately 48,000 cubic feet, Virginia Lands pond is approximately 30,000 cubic feet, and the capacity of the B-Zone pond is approximately 4,800 cubic feet. This capacity should not be exceeded.

The NOI provides the volumetric capacity of each pond and the maximum average monthly discharge for the 10-year period prior to 26 November 2014. The NOI states that the maximum monthly discharge is approximately:

- 35% of the volumetric capacity of the Jameson Trust Lease
- 8.6% of the volumetric capacity of the Virginia Lands Lease
- 15% of the volumetric capacity of the B-Zone Lease

The NOI states that average annual evaporation in the area is approximately 65.17 inches and precipitation is approximately 5.39 inches. Using these rates and the surface areas of the ponds, the balance of evaporation/ precipitation is calculated.

- Jameson Trust Lease pond. Volumetric capacity: 10,687 bbls, maximum monthly discharge: 3,789 bbls, evaporation/precipitation balance: 5,324 bbls/yr evaporation.
- Virginia Lands Lease pond. Volumetric capacity: 8,015 bbls, maximum monthly discharge: 693 bbls, evaporation/precipitation balance: 6,655 bbls/yr evaporation.
- B-Zone Lease pond. Volumetric capacity: 1,282 bbls, maximum monthly discharge: 193 bbls, evaporation/precipitation balance: 1,065 bbls/yr evaporation.

The NOI does not discuss infiltration rates and does not utilize infiltration in the pond storage capacity balance. As such, using the provided numbers and neglecting infiltration, the Virginia Lands Lease pond and the B-Zone Lease pond may have adequate capacity to dispose of the reported maximum monthly flows. For the Jameson Trust Lease pond, the total volumetric capacity of the pond appears to be inadequate to receive the provided maximum monthly discharge over a one-year period. Nonetheless, Staff are unaware of instances of overflow from the Jameson Trust Lease pond. While it is unlikely that the discharge will occur at the maximum monthly flow for a sustained period, additional analysis is needed to justify a flow limit of 3,789 bbls/month. The analysis should include an appropriate engineering monthly water balance that considers inflow to the pond, precipitation associated with a 100-year wet year distributed according to monthly rainfall patterns, and monthly evaporation and infiltration rates.

Provision E.3 of General Order Three requires acceptable flow meters to be installed at a location or locations to ensure the accurate measurement of all discharge flows. The NOI states that the volumetric flows of the discharges to the ponds are not monitored on continuous basis. Instead, the wastewater is discharged in discrete batches on a weekly or biweekly basis with the volume of each individual batch gauged at the tank. The NOI states that this method of measuring the volume of the discharge is more accurate than the estimates provided by flow meters. The NOI states that 25 Hill does not intend to install flow meters because the measurement of the discrete batches is a better method to determine the volume of the discharges.

General Order Three also specifies that the discharge of fluids used in well stimulation treatment, as defined by California Code of Regulations, title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation) is prohibited. 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 oil is produced by primary recovery only and there are secondary techniques to alter or enhance the natural residual water and gas drive remaining in the reservoir. The NOI states that 25 Hill performs no individual well stimulation activities.

Surface Water, Water Supply Wells, and flood Protection

The NOI states that there are no surface water bodies within a mile of the Lease. While there are Federal Emergency Management Agency (FEMA) 100 or 500- flood zones that cross the Leases within topographic drainages that trend from southwest to

northeast, the tank farms and ponds are located on elevated areas outside of these flood zones and are further protected by being surrounded by 2- to 3-foot high berms. The NOI states that there are no water wells identified within five miles of the Leases.

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 Leases, the NOI states, "Tank bottoms are periodically removed from the oil/water separation tanks and are hauled off-site for disposal at a disposal facility. If, in the future, solids are generated that will to be reused on-site for berms or roadways, a Solids Management Plan will be submitted to the Central Valley Water Board at least 180 days prior to any solid waste removal and disposal."

General Order Three indicates that proposed changes in solids use, storage, or disposal practices need to be reported in writing to the Central Valley Water Board's Executive Officer at least 90 days in advance of the change and shall be pre-approved by the Executive Officer.

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.*"

The NOI states that no produced wastewater is currently used for dust control, construction, or fire protection. If wastewater is going to be used for dust control, construction, or fire protection, 25 Hill Properties will submit a management plan at least 90 days before the anticipated discharge. Per General Order Three, if 25 Hill decides to use produced water as dust control or in construction activities at the Leases, it would need to provide a proposed management plan for such activities, as described in Provision E.6. in General Order Three at least 90 days prior to the anticipated discharges. Discharges would need to be approved by Executive Officer by approval of the management plan.

Regional and Hydrogeologic Conditions

The NOI states that the region has an average annual precipitation rate of 5.39 inches, according to an annual precipitation map from the Kern County Department of Public Works (KCDPW). The NOI states that most of the precipitation is received during the winter months from December through March. Isohyet maps obtained from the KCDPW Floodplain Management Department indicate that the 100-year, 24-hour, maximum precipitation is 3.52 inches. Evaporation is 65.17 inches per year, and the thickness of the moisture-deficient zone is in excess of 50 feet.

According to the NOI, the Leases are at an elevation of approximately 1,000 feet above sea level. The tank farms and the ponds at the leases are on elevated topographic features and are physically separated from the seasonal drainages which cross the

Leases. All the tanks and ponds are surrounded by two- to three-foot-high berms and are fenced and netted. These features prevent the commingling of produced water with storm water. The NOI also states that none of the local drainages are connected to navigable waters of the United States. Any storm water flows in these drainages percolate into the adjacent Midway Valley and none of the storm water drains into any regionally connected streams, rivers, or other water bodies.

The Leases are near the boundary between the southern portions of the Great Valley and Coastal Ranges geomorphic provinces. The Leases lie along the northeastern flank of the Temblor Range adjacent to the northwest to southeast trending Midway Valley. Surface deposits consist of outcropping Pliocene to Pleistocene, Tulare Formation, non-marine sediments. The Tulare Formation consists of continental beds of poorly consolidated alternating sand and gravel with lenticular, gypsiferous deposits. Sand and gravel sequences within the Tulare Formation contain significant quantities of crude oil and were responsible for the primary oil production during the early development of the Midway-Sunset Field. Above the producing zones are the upper Tulare shales. Immediately beneath the upper Tulare shales is the top of the Tulare reservoir sands, which consist of three main sand zones: the upper, middle, and lower Tulare sands. The initial occurrence of groundwater beneath the Leases is at a depth more than 300 feet below ground surface (bgs) and is present within the Tulare Formation and these fluids contain petroleum which results in this area being referred to as having "no top water".

The NOI states that the Leases are in an area of extensive plio-pleistocene faulting. However, there are no known faults beneath the Leases and no surface evidence of faulting. The most notable fault in the area is the San Andreas Fault situated 20 miles to the south of the Leases. The Tulare A/Alluvium Undifferentiated is thin to nonexistent in the study area. It thickens to the east where it merges with the valley alluvial Tulare. This sand dominated facies is characterized by thick sands with interbedded silts and mudstones.

The Leases have 300 to 400 feet of unsaturated air sands overlying unproductive oil and fluid bearing Tulare Formation sands below this, with the first economic production in the Sub-Lakeview Zone at a depth of approximately 800 feet bgs. The fluids in the overlying unproductive sands contain petroleum which results in this area being referred to as having "no top water."

Provision Four of General Order Three

Provision Four of General Order Three (Provision 4) states that the Discharger must 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 water and constituents associated with other approved wastes discharged at the Facility will not migrate into areas where 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 states that the Leases are situated on an alluvial fan derived from the Temblor Range into the Midway Valley. The Leases have 300 to 400 feet of unsaturated air sands overlying unproductive oil and fluid bearing Tulare Formation sands. The first economic production is in the Sub-lakeview zone at a depth of approximately 800 feet bgs. The fluids in the overlying unproductive sands contain petroleum which results in this area being referred to as having “no top water.” The NOI states that the provided analytical results of the produced water samples document the unusable condition of groundwater beneath the Leases, which is further demonstrated by the lack of water wells not only within a mile radius, but beyond a five-mile radius of the site. Also, the nearest agricultural cultivation is greater than three miles from the Lease, and the water for these activities is provided entirely by irrigation canals connected to the California Aqueduct.

The NOI states that coverage under General Order Three is appropriate for the discharges because there is no usable groundwater beneath the Leases. Therefore, the NOI states that the Leases are exempt from the requirement to construct groundwater monitoring wells for periodic monitoring. The NOI states that the presented hydrogeologic investigation demonstrates that there are no designated beneficial uses for the groundwater beneath the site and suggests that a Basin Plan amendment is not required for the Leases.

Based on the hydrogeologic information provided, General Order Three appears appropriate, however, the NOI identifies groundwater beneath the Leases and it appears that 25 Hill needs to follow the compliance schedule in General Order Three.

Monitoring and Reporting Program No. R5-2017-0036

Information presented in the NOI suggests that the Leases are appropriate for Monitoring and Reporting Program No. R5-2017-0036 (MRP), which is a part of General Order Three. The MRP includes monitoring, record-keeping, and reporting requirements. Monitoring of discharges of produced water, water-supply wells (if applicable), and the application of recycled materials are included in the requirements of the MRP.

The requirements of the MRP are necessary to ensure that the discharge and facility remain in compliance with General Order Three. 25 Hill should review the MRP and the requirements therein.

SUMMARY OF COMMENTS

Staff reviewed the NOI and additional information and found that General Order Three appears to be appropriate for the Leases. Staff noted the following comments:

1. Although the provided assessments and information suggest that discharges to the ponds are appropriate for coverage under General Order Three, it appears that there is groundwater beneath the Leases and 25 Hill needs to work to obtain a Basin Plan Amendment.
2. According to the information provided by the NOI, the volumetric capacity of the Jameson Trust Lease pond may be inadequate to dispose of the provided maximum monthly discharge over a one-year period. 25 Hill should provide a technical report in the form of an engineering water balance demonstrating a flow limit of 3,789 bbls/month or a different flow limit that can be justified. The water balance should consider inflow to the pond, precipitation associated with a 100-year wet year distributed according to monthly rainfall patterns, and monthly evaporation and infiltration rates for approval by the Central Valley Water Board's Executive Officer. The new water balance needs to demonstrate that the pond can sufficiently contain the proposed amount of discharged wastewater such that adequate containment capacity is achieved with a minimum freeboard of two feet, and no overflow of wastewater occurs.
3. 25 Hill should not exceed the design capacity of the ponds with adequate freeboard. Unless a California registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, General Order Three specifies that the operating freeboard should never be less than two feet.
4. Monitoring and Reporting Program No. R5-2017-0036, which is a part of General Order Three, appears appropriate for the Leases. The MRP requires quarterly reporting for analytes, monthly discharge volumes, facility information, additive information, and other items. 25 Hill should become familiar with the monitoring program.