FACT SHEET
U.S. Environmental Protection Agency, Region 9
Draft Class V Non-Hazardous Underground Injection Control Permit
Permit Number R9UIC-CA5-FY20-3
Elk Hills Power

Location:
The three Existing Wells, 25A-18G, 35A-18G, and 35-18G are located in Section 18, Township 31S, Range 24E, SW 1/ 4 at the Elk Hills Power Facility in Tupman, Kern County, California.

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I. Purpose of the Fact Sheet

The U.S. Environmental Protection Agency, Region 9 (EPA) has prepared this fact sheet for the draft Class V Non-hazardous Underground Injection Control (UIC) Permit (Draft Permit), proposed to be issued to Elk Hills Power (EHP or the Permittee). Pursuant to EPA's permitting regulations in Title 40 of the Code of Federal Regulations (CFR) §124.8, the purpose of this fact sheet is to briefly describe the facility and activities being permitted, type of fluids or pollutants to be injected, a brief summary of the basis for permit conditions along with regulatory citations and appropriate supporting references to the record, background information on the permit process, and a description of EPA's final decision-making process.

II. Description of the Facility

The Elk Hills Power plant (EHP) is located in Tupman, California, approximately 25 miles southwest of Bakersfield, in western Kern County. The facility consists of a 550-megawatt, natural gas-fired, power plant facility which provides power for over 50,000 homes. In 2013, the facility became a cogeneration facility and began delivering steam and electric power for oil and gas processes directly to the Elk Hills oil field production operations.

In February 2001, pursuant to a Class I UIC Permit CA200002 (the Class I UIC permit), EPA authorized the construction and operation of two (2) injection wells (25-18G and 35-18G) at EHP. The Class I UIC permit was modified in 2004 to authorize installation of two additional injection wells (25A-18G and 35A-18G). In 2010, Well 25-18G was plugged and abandoned. The three existing wells, 25A-18G, 35A-18G, and 35-18G, are hereinafter referred to as the Existing Wells.

In 2011, EPA received a timely application for renewal of EHP's Class I UIC permit, under which the facility is currently regulated. Upon review, EPA determined that the approved injection formation, the Upper Tulare Formation, is an Underground Source of Drinking Water (USDW). EPA consulted with the Central Valley Regional Water Quality Control Board, the State Water Resources Control Board, and the California Geologic Energy Management Division (CalGEM, formerly known as the Divison of Oil, Gas and Geothermal Resources, or DOGGR), and determined that, based on the status of the injection formation and the injectate constituents, the EHP injection wells would be more appropriately regulated by EPA through a UIC Class V injection permit instead of a Class I UIC permit. EHP subsequently applied for a Class V non-hazardous waste injection well permit. The permit application seeks to re-permit the existing three UIC Class I non-hazardous injection wells as UIC Class V non-hazardous injection wells for a 10-year period of continued injection of the EHP plant wastewater. This Draft Permit would re-classify the EHP injection wells as Class V wells and authorize the Permittee to continue operation and injection into the Existing Wells. Concurrent with this Class V UIC permit becoming effective, the Class I UIC permit renewal application would be withdrawn by EHP.

EHP's non-hazardous wastewater is disposed of in the Existing Wells, which are located about four miles south of the power plant site. The injection fluid consists of turbine wash wastewater, cooling tower blowdown wastewater, plant area wash wastewater, reverse osmosis regeneration wastewater, plant and equipment drains wastewater, filter backwash wastewater, and non-oil-contaminated storm runoff wastewater. Injection fluids may include chemical additives for the purpose of facility and well operation and maintenance, and must be reported to EPA, if used.

If issued, the Draft Permit would authorize continued injection into the Upper Tulare Formation at an average of 72 to 212 gallons per minute, or 2,480 to 7,269 barrels per day, at depths ranging between approximately 650 and 1,800 feet below ground surface.

III. Brief Summary of Specific Permit Conditions

To ensure that the proposed injection activity complies with all relevant Safe Drinking Water Act (SDWA) regulations at 40 CFR §§124, 144, 146, 147, and 148 and to protect public health and Underground Sources of Drinking Water (USDWs), EPA is proposing the following conditions for construction, testing, corrective action, operation, monitoring and reporting, plugging and abandonment, and financial assurance in the Draft Permit. The sections below summarize the proposed conditions, requirements, and other permit considerations.

Requirements Prior to Drilling, Testing, Constructing, or Operating (Part II, Section A of the Draft Permit)

The UIC regulations require that a permittee choose a financial assurance mechanism from a list of options. EHP is required to provide evidence to EPA of financial assurance for the plugging and abandonment of Wells 25A-18G, 35A-18G, and 35-18G, as required by 40 CFR §146.10, and the Draft Permit would require that EHP maintain adequate financial assurance in order to inject pursuant to this Draft Permit. 40 CFR §144.52(a)(7). In addition, the Draft Permit calls for EHP to notify EPA of activities to test the wells and the injection formation, and timely reporting of those activities.

Conditions for Existing Well and Future Well Construction (Part II, Section B of the Draft Permit)

The Draft Permit identifies the precise locations of Wells 25A-18G, 35A-18G, and 35-18G and includes a schematic for each well. Attachment C of EHP's permit application described the logs and other tests conducted during drilling and construction of the Existing Wells, including deviation checks, casing logs, and injection formation tests. EHP also conducted formation evaluation wireline logging operations and used those results to estimate and report values for hydrocarbon saturation, porosity, lithology, formation water resistivity, TDS concentrations, and rock mechanical properties for the injection zone identified within the permitted geological sequence and for other selected intervals.

The Draft Permit sets the maximum allowable injection pressure (MAIP) at 200 psi. The Draft Permit also sets the injection rate which shall not exceed 628,500 gallons per day. 40 CFR §146.13(d)(1).

The Draft Permit also requires EHP to install and maintain the monitoring devices necessary to obtain samples of the injection fluids, and to continuously measure and record the injection pressure, annulus pressure, flow rate, and injection volumes at Wells 25A-18G, 35A-18G, and 35-18G. EHP must give advance notice to EPA of any planned physical alterations or additions to the wells. 40 CFR §144.51(l)(1).

The Draft Permit only authorizes Wells 25A-18G, 35A-18G, and 35-18G. If EHP wants to drill any additional injection wells in the future, the Draft Permit requires EHP to apply to EPA for a permit modification. 40 CFR §§124.5 and 144.39.

Corrective Action (Part II, Section C of Draft Permit)

The Permittee is not required to conduct any corrective action, in accordance with 40 CFR §§144.55 and 146.7, prior to EPA granting authorization to inject under this Permit.

Beginning in March 2021 and annually every March thereafter, the Permittee shall review the ZEI calculation based on any new data obtained from the FOT and static reservoir pressure observations and shall provide to EPA a copy of the modified ZEI calculations, along with all associated assumptions and justifications, with the next Quarterly Report.

Well Operation (Part II, Section D of the Draft Permit)

EHP must demonstrate that Wells 25A-18G, 35A-18G, and 35-18G have mechanical integrity and that the proposed injection fluid is not hazardous. EHP shall demonstrate that there are not significant leaks: 1) in the casing and tubing that would allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Park 142 or may otherwise adversely affect the health of persons (internal mechanical integrity); and 2) through the casing wellbore annulus or vertical channels adjacent to the injection wellbore (external mechanical integrity). 40 CFR §144.12 and 146.8(a)(2).

The Draft Permit requires periodic mechanical integrity tests (MITs) via a casing/tubing annular pressure test at least once every five (5) years, continuous pressure monitoring in each well, and a radioactive tracer and a temperature log (or other approved diagnostic tool or procedure) annually. 40 CFR §146.8(b). The tubing/casing annulus pressure of the wells will be continuously monitored and recorded to verify that internal mechanical integrity of the wellbore is maintained during operations, as required by 40 CFR §146.8(a)). Radioactive tracer and temperature surveys will be conducted to verify the absence of significant fluid movement through vertical channels adjacent to the wellbore. Loss of mechanical integrity of any of the Existing Wells would require EHP to send notification to EPA and take action to restore and confirm mechanical integrity of the well.

The Draft Permit also requires that EHP operate Wells 25A-18G, 35A-18G, and 35-18G in a manner that will not (i) initiate or propagate fractures in the injection zone or the confining zone, (ii) allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Park 142 or may otherwise adversely affect the health of persons per 40 CFR §144.12, or (iii) allow injection fluids to migrate to oilfield production wells.

Authorized injection fluids are non-hazardous waste waters consisting of boiler blow down, cooling tower blow down, boiler feed water conditioning waste waters, and raw water filter backwash that are generated from the EHP power plant operations. EHP must document any particulate filters used upstream of the injection wells. Injection fluids may include chemical additives for the purpose of facility and well operation and maintenance, and must be reported to EPA, if used.

Monitoring, Recordkeeping, and Reporting of Results (Part II, Section E of Draft Permit)

The Draft Permit requires continuous monitoring of injection fluid temperature, injection rate, daily injection volume, total cumulative volume, well head injection pressure, and annular pressure in Wells 25A-18G, 35A-18G, and 35-18G. The injectate must be sampled quarterly to determine the quantities/values of the following constituents using EPA-approved methods: inorganics (major anions and cations, and trace metals); solids (TDS and total suspended solids); general and physical parameters (temperature, turbidity, pH, conductivity, hardness, specific

gravity, alkalinity, biological oxygen demand, and density); volatile organic compounds; and semi-volatile organic compounds. Pursuant to the Draft Permit, EHP is required to maintain all operational and monitoring records, and to submit four (4) quarterly reports to EPA each year that include the results of the required monitoring, among other things. 40 CFR §144.54.

Further, on an annual basis, beginning one (1) year after the effective date of this Permit, an evaluation shall be submitted to EPA in which the results of the injectate sampling are compared with the USDW quality and the USDW quality is compared with prior collected data. The evaluations required by this condition shall compare newly collected USDW quality data with the initial values as provided in the permit application and any subsequent measurements. 40 CFR §144.12.

Plugging and Abandonment (Part II, Section F of the Draft Permit)

EHP will be required to plug and abandon Wells 25A-18G, 35A-18G, and 35-18G as provided in the Plugging and Abandonment Plans in Attachment Q of their permit application and Appendix G of the Draft Permit, which EHP submitted pursuant to 40 CFR §144.51(o). After a cessation of injection operations for two (2) years into any of the permitted injection wells, as required by 40 CFR §144.52(a)(6), EHP must plug and abandon the inactive well in accordance with the Plugging and Abandonment Plan unless EHP notifies EPA of its intent to reactivate any of the wells, has demonstrated that the wells will be used in the future, and describes actions or procedures to ensure that the well will not endanger USDWs during the period of temporary abandonment. The inactive well must pass an initial internal MIT before EPA authorizes temporary abandonment status. EPA may change the manner in which Wells 25A-18G, 35A-18G, and 35-18G will be plugged if the well is modified during its permitted life or if the proposed Plugging and Abandonment Plan for the well is not consistent with EPA requirements for construction or mechanical integrity.

Financial Assurance (Part II, Section G of the Draft Permit)

EHP will establish financial assurance through a surety bond and standby trust agreement for the plugging and abandonment of Wells 25A-18G, 35A-18G, and 35-18G in the amount of $630,000 as specified in 40 CFR §144.63(c), (see Attachment F of EHP's permit application). See also 40 CFR §144.52(a)(7). The financial assurance mechanism and amount will be reviewed annually and updated as needed. EPA may also require EHP to change to an alternate method for demonstrating financial assurance and to periodically estimate and update the Plugging and Abandonment Plan and/or the cost associated with it.

Duration of Permit (Part II, Section H of the Draft Permit)

EPA proposes to issue the Permit and the authorization to inject for a period of ten (10) years unless terminated under the conditions set forth in Part III, Section B.1 of the Draft Permit. 40 CFR §144.36.

IV. Permit Process

Application and Review Period

The EPA Water Director has authority to issue permits for underground injection activities under 40 CFR §144.31. EHP is applying for UIC Permit Number R9UIC- CA5-FY20-3 to convert existing Class I injection wells to Class V injection wells to dispose of non-hazardous waste waters generated from the EHP Power Plant, as listed in Section II.D.5.e. of the Draft Permit.

On March 24, 2020, EPA received a permit application from EHP for the reclassification and operation of Wells 25A-18G, 35A-18G, and 35-18G. A final application was prepared by EHP and submitted to EPA in September 2020. After completing a thorough technical review of all submitted information, EPA has determined that the information provided by EHP is sufficient to prepare the Draft Permit. The Draft Permit, if finalized, would authorize injection of non-hazardous waste waters into Wells 25A-18G, 35A-18G, and 35-18G for ten (10) years.

Based on our review of the operational standards, monitoring requirements, and existing geologic setting, EPA believes the activities allowed under the proposed Draft Permit are protective of USDWs defined at 40 CFR §144.3, as required under the SDWA.

Consultation

As part of the permit process, pursuant to 40 CFR §144.4, EPA is required to consider other federal laws, specifically Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA).

Endangered Species Act (ESA)

Under Section 7 of the ESA, the EPA is required to ensure that any action authorized by the Agency does not jeopardize the continued existence of any endangered or threatened species or adversely affect any critical habitat. The EPA is consulting with the US Fish and Wildlife Service (USFWS) to ensure that existing and future operations at the EHP facility comply with the ESA.

National Historic Preservation Act (NHPA)

The historic preservation review process mandated by Section 106 of the NHPA is outlined in regulations issued by the federal Advisory Council on Historic Preservation (ACHP) titled, "Protection of Historic Properties" at 36 CFR Part 800. In considering these requirements, the EPA must determine whether the proposed federal permit is an undertaking and whether it has the potential to cause effects on historic properties. Issuance of a federal permit is considered a federal undertaking; therefore, the EPA is required to meet the statutory responsibilities under Section 106, which include delineating the area of potential effect (APE) and documenting steps taken to identify historic properties, if any, that may be affected by this undertaking. In addition, Section 106 of the NHPA requires federal agencies to consult with federally recognized tribes to

ensure that Indian tribes which attach religious or cultural significance to historic properties that may be affected by an undertaking are provided a reasonable opportunity to participate in the process.

On June 24, 2020 EPA offered the Tejon Indian tribe an opportunity to consult on the proposed UIC permit action. EPA received a response from the tribe on August 25, 2020 that no consultation was requested.

Pursuant to the requirements of section 106 of the NHPA, EPA made a finding that no historic properties will be affected by the issuance of the draft Class V UIC permit. By letter dated December 18, 2020, the California State Historic Preservation Office (SHPO) concurred on EPA's finding that no historic properties will be affected.

Public Participation

The public has thirty (30) days to review and comment on the Draft Permit. 40 CFR §124.10. The Draft Permit, public notice, this fact sheet, EHP's permit application, and other supporting documents are available for public review online at www.regulations.gov under docket number EPA-R09-OW-2020-0733.

EPA is providing notice of the public comment period by publication in the Bakersfield Californian newspaper on January 24, 2021 and the comment period ends on February 23, 2021. During this period, all written comments on the Draft Permit can either be submitted online at www.regulations.gov under docket number EPA-R09-OW-2020-0733 or e-mailed to Michele Dermer at dermer.michele@epa.gov, who is also available by phone at (415) 972-3417 to answer any questions about the Draft Permit. If you are unable to submit comments electronically, or if you require assistance submitting comments, please reach out to Ms. Dermer at the email or phone number listed above.

All persons, including the applicant, who object to any condition of the Draft Permit or EPA's decision to prepare a Draft Permit must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position by the close of the comment period. 40 CFR §124.13. EPA has not scheduled a public hearing but may do so if there is a significant degree of public interest in the Draft Permit. 40 CFR §§124.11 and 124.12. In the event EPA schedules a hearing, EPA will provide thirty (30) days advance notice of the hearing to the public.

Final Decision-Making Process

After the close of the public comment period, EPA will review and consider all comments relevant to the Draft Permit and application. EPA will send a response to comments to the applicant and each person who has submitted written comments or requested notice of the final permit decision. EPA will also post the response to comments document on www.regulations.gov under docket number EPA-R09-OW-2020-0733. The response to comments will contain: a response to all comments on the Draft Permit; EPA's final permitting decision; any permit conditions that are changed and the reasons for the changes; and procedures for appealing the decision. The final decision shall be to either issue or deny the Permit. The final decision shall become effective no sooner than thirty (30) days after the service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any

person who filed comments on the Draft Permit, participated in any public hearing on this matter, or takes issue with any changes in the Draft Permit, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process. If no comments request a change in the Draft Permit, the Permit shall become effective immediately upon issuance. 40 CFR §124.15.