March 24, 2022

Mr. Jonathan Bishop  
Chief Deputy Director  
Mr. Michael A.M. Lauffer  
Chief Counsel  
California State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814

RE: Redondo Beach Generating Station National Pollutant Discharge Elimination System Permit No. CA0001201: Request for Time Schedule Order for Temperature and DDT Only

Dear Mr. Bishop and Mr. Lauffer,

AES Redondo Beach, LLC (“Redondo Beach”) respectfully asks the State Water Resources Control Board (“State Water Board”) to grant a narrow Time Schedule Order (“TSO”) to defer compliance only with cooling water discharge temperature and DDT limits for the Redondo Beach Generating Station (“RBGS”) under National Pollutant Discharge Elimination System (“NPDES”) Permit No. CA0001201. Redondo Beach seeks the narrower TSO for only two years, until December 31, 2023, when the remaining RBGS units are expected to be retired in accordance with the State’s once-through-cooling (“OTC”) Policy. Under the TSO, RBGS would remain subject to interim effluent limits for both DDT and temperature – as well as all applicable NPDES limits for all other parameters. This narrower TSO is needed to ensure that RBGS units can operate at their full available capacity when they are needed most to support electric system reliability.

Redondo Beach is seeking this relief from the State Water Board solely because the State of California has determined that RBGS is needed to provide reliable electricity for two more years. As explained previously, Redondo Beach had planned to achieve compliance with the State’s OTC Policy by retiring RBGS at the end of 2021. However, in March 2021, the Statewide Advisory Committee on Cooling Water Intake Structures (“SACCWIS”) recommended the State Water Board extend the OTC compliance deadline for Redondo Beach units 5, 6 and 8 until December 31, 2023.1 SACCWIS made this recommendation because it was the considered judgment of multiple state agencies responsible for ensuring a reliable supply of electricity that the State needs RBGS to operate for two more years, to address concerns of potential resource adequacy capacity shortfalls and to support electric system reliability. On October 19, 2021, the State Water Board extended the deadline for Redondo Beach units

5, 6 and 8 to comply with the OTC Policy from December 31, 2021, to December 31, 2023.\textsuperscript{2}

Concurrent with the SWRCB extension, AES also committed to a $1.5M voluntary supplemental environmental benefits program that is above and beyond the mandatory mitigation payments made by the AES under the OTC Policy – effectively doubling the mandatory amount for period of the RBGS extension. This voluntary environmental benefits program supports education and outreach through Tree People and the Bolsa Chic Wetlands projects and funds part of the Los Cerritos Wetlands project in Long Beach.

Accordingly, on September 15, 2021, Redondo Beach asked this Board to extend the deadlines associated with Time Schedule Order No. R4-2020-0139.\textsuperscript{3} This TSO included interim effluent limits for three discharge points: EFF001, EFF002 and INT001A as shown in Table 1:

<table>
<thead>
<tr>
<th>Discharge Point</th>
<th>Parameter</th>
<th>Units</th>
<th>30-day Average</th>
<th>AMEL</th>
<th>MDEL</th>
<th>Instantaneous Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>DDT</td>
<td>µg/L</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>Temperature</td>
<td>°F</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>pH</td>
<td>s.u.</td>
<td>6.0 – 9.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>Copper</td>
<td>µg/L</td>
<td>10</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>Nickel</td>
<td>µg/L</td>
<td>27</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>DDT</td>
<td>µg/L</td>
<td>2.5</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT001A</td>
<td>pH</td>
<td>s.u.</td>
<td>6.0 – 9.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: AMEL = Average Monthly Effluent Limit; MDEL = Maximum Daily Effluent Limit.

Table 1

On December 9, 2021, the Regional Water Board did not take action to extend the TSO.

After this Board declined to act, Redondo Beach conducted an extensive and detailed review of the RBGS operating data since the original TSO was issued in 2016. Based on that review, Redondo Beach has prepared this modified, narrower TSO application. The narrower TSO would allow the facility to fully support the reliability of the California electric system, but only retains interim limits for two parameters – all other parameters would be fully subject to the NPDES permit limits. Specifically, this modified, narrower TSO application:

- **Removes** previous TSO interim limits for certain parameters
  - Copper, nickel, and pH from EFF002 (Unit 8) due to sustained compliance
  - pH from INT001A (retention basin) due to compliance
- **Retains**
  - TSO interim limits for DDT for EFF001 (Units 5 & 6) and EFF002 (Unit 8)
  - TSO instantaneous maximum outlet temperature interim limits and reduces them from 106°F to 102°F for EFF002 (Unit 8) and for May – October only

Table 2 summarizes the modified, narrower TSO request:

\textsuperscript{3} Proposed TSO R4-2021-XXXX, NPDES Permit No. CA0001201 (Sept. 15, 2021).
Redondo Beach asks the State Water Board to consider this modified, narrower TSO application as expeditiously as possible and to provide for a TSO effective date of January 1, 2022, so that Redondo Beach can continue to support electric system reliability through December 31, 2023, as determined by the SACCWIS and approved by the State Water Board.

**Background**

Redondo Beach is part of The AES Corporation, a global leader in renewable energy development and operation in the United States, including California, and in 14 countries around the world. The AES Corporation seeks to accelerate the future of energy, together with customers, communities, and stakeholders through accelerated development of renewable energy, battery energy storage, and other zero-carbon energy solutions and is aligned with California’s goal to achieve a 100% carbon-free energy future. AES currently owns and operates over 1,392 MW of renewable energy assets and 100 MW/400 MWh of battery energy storage assets in addition to the 3,575 MW of natural gas-fired assets in California. AES has an extensive renewable energy and battery storage development pipeline in California and is one of the largest renewable energy developers in the U.S.

Under current operations, RBGS is an 834 MW steam electric generating facility located at 1100 N. Harbor Drive, Redondo Beach, California. For decades, RBGS has been a key resource of the California electricity system, with eight natural gas-fired units serving as essential power generating resources that have provided reliable electricity to meet California’s needs. In fact, 834 MW is close to the amount needed to cover the electricity shortage anticipated for summer 2022 as found in the California Energy Commission (“CEC”)/California Independent System Operator (“CAISO”) summer stack analysis. In recent years, even as units were retired, RBGS has been among the coastal electricity generating resources critical to facilitating the integration of renewable energy in California. RBGS helps ensure electric reliability by being available to provide ramping energy for those few hours when RBGS units are needed to balance the instantaneous changes to supply and demand, and to operate at full capacity during peak demand periods. Real time balancing of power supply and demand is necessary to ensure electric system reliability – or more simply, to avoid rolling blackouts that could leave millions without power during the hottest summer days.

To comply with the federal Clean Water Act, the State Water Board adopted its OTC Policy to establish technology-based standards for coastal power plants that use OTC water. Redondo Beach chose to comply under “Track 1” of the OTC Policy, which requires a plant to reduce the intake flow rate.

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2016, RBGS has operated under a TSO that contains a schedule for eliminating the discharge of OTC water and effluent limitations for four other pollutants – temperature, pH, copper, and nickel. A limit on a fifth pollutant, DDT, was added to the TSO in November 2017. DDT is present in the background conditions due to historical uses not related to operation of the plant. DDT is not used, nor added, by RBGS operations, but is present in the discharge only because the compound is in the intake water necessary to operate the plant.

Since the adoption of the OTC Policy, Redondo Beach has consistently and diligently worked to achieve compliance with both the OTC Policy as well as NPDES limits. Redondo Beach abandoned plans to expand in 2016 at this site, and started the planning process of shutting down entirely, retiring unit 7 in 2019 before the December 31, 2020, mandatory retirement date. AES’s other early OTC unit retirements, along with other OTC coastal power plant owners’ early retirements, have advanced the goals of the policy and reduced marine impacts. Indeed, AES alone has retired more than half of its OTC generating units early – and collectively, OTC flows in California have outpaced requirements under the OTC Policy.5

The State formed SACCWIS as an advisory committee convened to advise the State Water Board on how to implement the OTC Policy to ensure that it properly balances environmental objectives with the State’s need for reliable electricity. SACCWIS is a multi-agency committee that includes representatives from the CEC, California Public Utilities Commission (“CPUC”), California Coastal Commission, California State Lands Commission, California Air Resources Board (“CARB”), CAISO, and the State Water Board.

At the start of 2020, Redondo Beach had already retired units 1 through 4 and 7. The remaining units – units 5, 6, and 8 – were on schedule to be retired by December 31, 2020. However, based on the projected need for energy and concerns for grid reliability in the summer of 2021, on January 23, 2020, SACCWIS recommended to the State Water Board that it revise the OTC Policy to extend the compliance date for RBGS units 5, 6 and 8 for one year until December 31, 2021.6 Notwithstanding this recommendation, Redondo Beach stayed on track and in good faith took further formal steps to implement its plan to satisfy the OTC Policy and comply with NPDES effluent limits through RBGS retirement. On March 30, 2020, Redondo Beach sold the site to a developer, who will make other use of the property once the operating units are retired. Moreover, Redondo Beach immediately thereafter withdrew its then long-dormant Application for Certification to repower the facility.

On September 1, 2020, the State Water Board considered the SACCWIS recommendation and adopted an amendment to the OTC Policy that revised the RBGS final compliance date to December 31, 2021.7 As retirement remained the feasible plan for achieving compliance with both the OTC Policy and final NPDES effluent limits, following the State Water Board’s actions, the Regional Water Board granted Redondo Beach’s request to amend the TSO on December 10, 2020, to extend the compliance (retirement) date for units 5, 6 and 8 by one year to December 31, 2021. The Regional Water Board placed no new conditions on the extension or otherwise directed Redondo Beach to develop alternative compliance options, in the event the State again determined that RBGS needed to operate after

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5 Enclosure 4, Amendment to the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling to Extend the Compliance Schedule for the Redondo Beach Generating Station, Final Staff Report – State Water Resources Control Board at 25 (Oct. 19, 2021).
6 Enclosure 5, Statewide Advisory Committee on Cooling Water Intake Structures Final Recommended Compliance Date Extensions for Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach Generating Stations at 12 (Jan. 23, 2020).
7 Enclosure 6, State Water Resources Control Board Resolution No. 2020-0029 at 6 (Sept. 1, 2020).
December 31, 2021, to ensure the reliability of California’s power grid.

However, the State has in fact determined that RBGS needs to operate through December 31, 2023. Specifically, in March 2021, SACCWIS recommended the State Water Board extend the compliance date for RBGS units 5, 6, and 8 by two more years to support electric system reliability and address concerns of potential capacity shortfalls in 2022 and 2023 – i.e., to avoid rolling blackouts. After extensive review, on October 19, 2021, the State Water Board amended the OTC Policy in line with SACCWIS’s March 2021 recommendation. It is important to recognize that the impacts to marine life are expected to be at or below the baseline established in 2010 if the compliance date for Redondo Beach is extended.

Contemporaneous with the State Water Board’s review, on September 15, 2021, following SACCWIS’s pending recommendation, Redondo Beach asked the Regional Water Board to extend the then existing TSO from December 31, 2021, to December 31, 2023. The requested extension would have merely matched the State Board OTC extension, consistent with the well-established plan to achieve the final limits by retiring the remaining units. During the extension, the discharge from RBGS would have remained subject to the interim effluent limitations established by the Regional Water Board for temperature, pH, copper, nickel, and DDT until RBGS is retired. On December 9, 2021, the Regional Water Board did not take action to extend the TSO.

**TSO History**

Table 3 outlines the historic perspective of the original TSO request in 2016 and actions taken to date. As can been seen, aside from the original request, the TSO has only been extended once in 2020 in support of the SWRCB extension of RBGS through December 31, 2021. During the interim period there were two amendments to reflect the addition of DDT in 2017 and change to the unit retirement order in 2018.

<table>
<thead>
<tr>
<th>TSO</th>
<th>Date</th>
<th>Reason for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4-2016-0223</td>
<td>6/9/2016</td>
<td>RWB approved TSO concurrent with NPDES Permit renewal</td>
</tr>
<tr>
<td>R4-2016-0223-A01</td>
<td>11/30/2017</td>
<td>No extension – RWB amended TSO to add DDT to both outfalls</td>
</tr>
<tr>
<td>R4-2016-0223-A02</td>
<td>12/21/2018</td>
<td>No extension – RWB amended TSO to reflect change to Track 1 compliance</td>
</tr>
<tr>
<td>R4-2020-0139</td>
<td>12/10/2020</td>
<td>RWB approved extension to match OTC deadline to support energy needs</td>
</tr>
<tr>
<td>Tentative Order R4-2021-XXXX</td>
<td>12/9/2021</td>
<td>Extension requested to align to new OTC deadline of 12/31/2023 – No action</td>
</tr>
</tbody>
</table>

**Table 3**

**Progress in Achieving OTC Policy Objectives**

Redondo Beach has consistently and diligently made progress toward the OTC Policy objectives. With the retirement of unit 7 in November of 2019, Redondo Beach reduced the max daily flow for the facility

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8 Enclosure 1, at 30.
9 Enclosure 2, at 1–2 (noting that compliance dates were developed considering information provided by the CEC, CPUC, and CAISO).
10 Enclosure 5, at 24.
by more than one third (see Figure 1).

In addition, the annual 2021 EFF002 flow has been reduced by 50% since 2017 and the effluent flow for the facility has been reduced by 40% over the same period (see Figure 2). These reductions are a direct result of the shutdown of unit 7 as well as various operational changes to minimize the use of OTC flow to support facility operations. Reduction of effluent discharge further reduces the quantity of potential contaminants in the discharge stream from a mass perspective and can also decrease the potential for entrainment and impingement that may occur from the intake of OTC.

Redondo Beach Has Also Made Progress in Achieving NPDES Limits
RBGS has maintained a very strong compliance record for over 3 dozen NPDES permit parameters not covered by the historic TSO. Additionally, even as Redondo Beach has planned to comply with all limits by retiring the remaining RBGS units, the facility has nonetheless been able to make progress towards achieving NPDES limits for certain parameters that had been covered by the prior TSO. Following the December 9, 2021, Regional Water Board hearing, Redondo Beach, with the support of Cordoba Corporation and MBC, thoroughly reviewed and analyzed the influent and effluent data since the fourth quarter of 2016. As a result of this detailed analysis, Redondo Beach has modified this TSO request to exclude previous TSO interim limits as follows:

- Copper, nickel, and pH from EFF002 due to sustained compliance
- pH from INT001A (retention basin) due to compliance

**Copper: Removed from TSO Application for EFF002**

First, the proposed narrower TSO would not cover copper discharges from outfall EFF002. Copper discharges would be subject to the NPDES permit limits. **Figures 3 and 4** below show that although the daily maximum effluent concentration and daily maximum effluent mass for copper have been near the NPDES limits for EFF002, the effluent limits have not been exceeded over the period analyzed – even though the influent levels have shown the presence of copper. After analyzing this data, Redondo Beach has modified and narrowed its application and is no longer asking the Regional Water Board to extend the TSO for copper for EFF002.
Nickel: Removed from TSO Application for EFF002

Second, the proposed narrower TSO likewise would not cover nickel discharges from outfall EFF002. Nickel discharges would be subject to the NPDES permit limits. Figures 5 and 6 below show that although the daily max effluent concentration and daily max effluent mass for nickel have been near the NPDES limits for EFF002, the effluent limits have not been exceeded over the period analyzed – even though the influent levels have shown the presence of nickel. After analyzing this data, Redondo Beach has modified this TSO application to remove a request to extend the TSO for nickel for EFF002.
pH: Removed from TSO Application for EFF002

Third, the proposed narrower TSO would not cover pH of the discharge from outfall EFF002. The pH range for that discharge would be as in the NPDES permit. With careful focus on operations, Redondo Beach has been able to meet the final NPDES permit limits for pH for EFF002 (see Figure 7). After analyzing this data, Redondo Beach has modified this TSO application to remove a request to extend the TSO to cover the pH level of the discharge from EFF002.
pH: Removed from TSO Application for INT001A

Fourth, the proposed narrower TSO would not cover pH of the discharge from outfall INT001A. The pH discharges through INT001A would likewise be subject to the NPDES permit. Redondo Beach installed an aeration system in March 2019 to reduce algae and improve mixing of the low volume wastewater retention basin, which discharges at INT001A (see Figure 8). We experienced challenges with both pH and total suspended solids during the installation and commissioning of this system. However, Redondo Beach believes that we are currently able to maintain pH compliance with the NPDES limits. Therefore, we have removed the request to extend the TSO for pH for INT001A from this application.

![INT001A pH Graph](image)

Figure 8

Modified, Narrower TSO Would Retain Interim Limits for DDT and Temperature

As indicated earlier, following the December 9, 2021, Regional Water Board hearing, Redondo Beach, with the support of Cordoba Corporation and MBC, thoroughly reviewed and analyzed the influent and effluent data since the fourth quarter of 2016. As a result of this detailed analysis, Redondo Beach continues to request a TSO for DDT and temperature only to allow operations to support electric system reliability through December 31, 2023, as recommended by SACCWIS and approved by the State Water Board.

DDT

Redondo Beach seeks a TSO to cover DDT which is present in the background intake water that is required to operate the plant but is not used or added by RBGS operations. RBGS does not have any way to limit the DDT contained in the intake or control the DDT that is returned to the environment upon discharge. Hence, the plan to achieve compliance with the DDT limits set in the permit has consistently been to retire the remaining RBGS units. The narrowed TSO sought here would merely seek to continue
the interim DDT effluent limits that have been in place since November of 2017. Compliance with final effluent limits will be achieved when the remaining RBGS units are retired by December 31, 2023.

As is well established, DDT was a widely used insecticide, before EPA banned its use in 1972. However, DDT is also known to be extremely persistent in the environment, adhering strongly to soils and sediment. U.S. EPA has established Total Maximum Daily Load (“TMDL”) levels for certain pollutants in water bodies across the country, including for DDT in the Santa Monica Bay. The 2012 State Water Board’s California Clean Water Act section 303(d) List classifies the Santa Monica Bay (Offshore and Nearshore, including Redondo Beach and King Harbor) as impaired for DDT.\(^\text{11}\) This TMDL includes waste load allocations for DDT discharged from point sources, including RBGS.

The NPDES permit sets DDT limits for the RBGS discharge, with mass limits established considering the TMDL and assuming the plant achieves the maximum permitted flow. Thus, for Discharge Point EFF001, the NPDES Permit includes a 30-day average effluent limitation for DDT measured in micrograms per liter (“µg/L”) in addition to a mass effluent limitation measured in pounds per day (“lbs/day”). Discharge Point EFF002 includes a daily maximum and a monthly average effluent limit measured in µg/L, in addition to a daily maximum and a monthly average mass limitation measured in lbs/day. The mass limitations are based on the permitted discharge flow for each discharge point (215 million gallons per day (“MGD”) for Discharge Point EFF001 and 674 MGD for Discharge Point EFF002). Redondo Beach’s intake and discharge locations are shown on Figure 9 below.

RBGS does not use or add DDT in its operations – the concentration of DDT depends entirely on external forces acting on the intake water, which vary over time. Hence, as Figures 10 and 11 illustrate, there has been considerable variability in DDT influent levels – most notably in 2017 and 2018 – that prompted

\(^\text{11}\) A TMDL sets the maximum amount of a pollutant allowed to enter a waterbody so that the defined waterbody will meet and continue to meet water quality standards for that pollutant. The Santa Monica Bay TMDL for DDT extends from Point Dume to Point Vicente and the Palos Verdes shelf from Point Vicente to Point Fermin. This area includes an active EPA Superfund site at the Palos Verdes Shelf due to legacy DDT contamination.
this Board to add DDT to the TSO on November 30, 2017, recognizing that Redondo Beach operations do not influence the amount of DDT in the environment. More recently, as further seen in Figures 10 and 11, RBGS sampling data suggests that the concentration of DDT has improved in the intake waters, but there were still several sampling events in 2019, 2020, and 2021 that suggest a potential risk of future non-compliance with the NPDES limits as shown in Table 4, even when considering the provision for limited intake credits. EFF002 does allow for the use of intake credits and, while conceptually good in principle, it does not consistently address potential variability in intake/outfall samples and small differences of test results at such low detection levels. EFF001, on the other hand, does not allow the provision for intake credits due to the reclassification of King Harbor as an enclosed bay and differing water bodies for the intake and outfall; however, it is exposed to the same background level concern.12

<table>
<thead>
<tr>
<th>Date</th>
<th>Actual µg/L</th>
<th>Actual lbs/day</th>
<th>NPDES Limit µg/L</th>
<th>NPDES Limit lbs/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/31/19</td>
<td>0.400</td>
<td>0.030</td>
<td>0.00017</td>
<td>0.0003</td>
</tr>
<tr>
<td>2/29/20</td>
<td>0.00075</td>
<td>0.00017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/30/20</td>
<td>0.0017</td>
<td></td>
<td>0.00017</td>
<td></td>
</tr>
</tbody>
</table>

Table 4

12 Shown here in tabular format for clarity. Given the extraordinarily low-level results against low NPDES permit limits, it does not register well against previous data in 2017–18 timeframe.
Alternatives

There are no feasible alternatives to address variability in background DDT levels and Redondo Beach will meet final DDT limits by unit retirements.

Revised DDT TSO Request

Given that RBGS has no control over the DDT in its intake water and AES’s review of the sampling data suggests a potential risk, albeit minimal, of future noncompliance with the NPDES limits for DDT, Redondo Beach respectfully asks for a continuation of the interim DDT limits through December 31, 2023, as follows:

<table>
<thead>
<tr>
<th>Discharge Point</th>
<th>Parameter</th>
<th>Units</th>
<th>30-day Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFF001</td>
<td>DDT</td>
<td>µg/L</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discharge Point</th>
<th>Parameter</th>
<th>Units</th>
<th>AMEL</th>
<th>MDEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFF002</td>
<td>DDT</td>
<td>µg/L</td>
<td>2.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Compliance with the NPDES limits will be achieved by permanent shutdown of units 5, 6 and 8 by December 31, 2023.

Maximum Instantaneous Discharge Temperature (EFF002)

Redondo Beach seeks a TSO for an interim maximum instantaneous discharge limit of 102°F from May
through October at Outfall EFF002. The NPDES limit is 86°F. The previous TSO limit for this outfall was a year-round maximum instantaneous discharge limit of 106°F. This TSO request reflects the need to operate RBGS during the hottest summer periods to provide reliable electricity when it is needed most—and during which Redondo Beach must rely on warmer intake water. However, this TSO request considers the available historical data and proposes a lower, seasonal interim temperature limit that includes a safety margin that allows for transient inlet temperature conditions. As with DDT, compliance with the NPDES permit limit will be achieved upon retirement of RBGS.

The Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties classifies King Harbor as an enclosed bay. The State Water Board, in a memo dated July 18, 2001, identified the receiving waters for the RBGS Discharge Point EFF002 as subject to requirements of the State Implementation Policy (“SIP”), which is applicable only to inland surface waters, enclosed bays, and estuaries of the state. In a letter dated January 21, 2003, the Regional Water Board notified Redondo Beach of the reclassification of the outfall from an ocean discharge to an enclosed bay discharge. Order R4-2016-0222 and its subsequent amendments reflect the reclassification of the discharges from Discharge Point EFF002. Therefore, the RBGS discharge from EFF002 is subject to requirements of the SIP, which establishes an instantaneous maximum discharge temperature of 86°F as required by the Thermal Plan.

**EFF002 Maximum Instantaneous Discharge Temperature Data Supports a TSO**

AES’s review of NPDES sampling data confirms the need for a TSO, although the level may be reduced from the prior TSO interim limits in light of the historic data. Starting in June 2016, an interim maximum instantaneous discharge limit of 106°F was applied under the prior TSO. The interim limit recognized the limited effect that Redondo Beach operations have on King Harbor receiving waters. The interim limit was also consistent with the effluent limit in the prior NPDES permit for RBGS which considered the outfall an ocean discharge.

In accordance with its NPDES permit, Redondo Beach has been conducting semi-annual temperature surveys (winter and summer) since 1978 that evaluate the impact of discharge temperature on King Harbor and Santa Monica Bay. The following data in Table 5 shows the maximum instantaneous discharge temperature of EFF002 from 2017 through 2021 over the months of May – October as monitored by continuous temperature monitoring:

<table>
<thead>
<tr>
<th>Year</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>99°F</td>
</tr>
<tr>
<td>2018</td>
<td>96°F</td>
</tr>
<tr>
<td>2019</td>
<td>89°F</td>
</tr>
<tr>
<td>2020</td>
<td>99°F</td>
</tr>
<tr>
<td>2021</td>
<td>91°F</td>
</tr>
</tbody>
</table>

**Table 5**

Unit 8, which discharges from EFF002, is operated at the direction of CAISO, and operates for limited periods of time to support electric system reliability. The unit is typically run during May – October, in response to extreme conditions on the grid and for short periods of time as shown by Figure 12. In fact, most of the time Unit 8 outlet temperature is below the NPDES permit limit, but there are times when the full capability of the unit is directed by CAISO and can result in outlet temperature rising above the NPDES permit limit for short periods of time.
Additionally, it should be noted that naturally occurring changes in inlet temperature conditions exist due to the shifting tide cycle – up to ±5°F – having a more restrictive impact during the flood tide. Inlet temperature variability becomes particularly important when managing unit MW output as directed by CAISO and the outlet temperature limit is approached which could potentially restrict full plant output for limited periods of time without the benefit of the TSO – most likely during periods when energy needs are at their highest (i.e., the summer months of July – October) and the peak of the day (4:00 – 9:00 pm).

**The Interim TSO Limits Have Not Caused Receiving Water of King Harbor to Exceed NPDES Permit Limits**

The data collected from the receiving waters likewise support the proposed TSO. The receiving water results confirm that even with an interim instantaneous maximum temperature receiving water temperature limits have not been exceeded.

As part of the NPDES permit, the facility conducts semi-annual monitoring of the receiving waters for the Redondo Beach OTC discharge points. Among the various aspects monitored, temperature conditions within King Harbor are monitored during the winter and summer periods, during flood and ebb tide conditions. The intent of this monitoring is to, among other aspects of the studies, evaluate the potential influence of OTC discharges on the receiving water temperature profiles. Specifically, under the NPDES permit, the following criteria apply to EFF002 in King Harbor:

The discharger shall not cause the following in King Harbor: surface water temperature to rise greater than 5°F above the natural temperature of the receiving waters at any time or place. At no time shall the temperature be raised above 86°F as a result of the waste discharged.

A review of monitoring data from 2016 through 2021 demonstrates that the receiving waters have been within the absolute temperature limit of 86°F established by the NPDES permit for the discharge into King Harbor (see Table 6).
<table>
<thead>
<tr>
<th>Sampling Date</th>
<th>Discharge Flow to King Harbor via Outfall EFF002</th>
<th>EFF002 Discharge Temperature (°F)</th>
<th>King Harbor Surface Temperature (Ebb/Flood Tide)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/2/16</td>
<td>159 MGD</td>
<td>76.6°F</td>
<td>74°F/72°F</td>
</tr>
<tr>
<td>8/2/17</td>
<td>55 MGD</td>
<td>76.6°F (8.0°F higher than intake temperature)</td>
<td>73°F/75°F</td>
</tr>
<tr>
<td>7/9/18</td>
<td>504 MGD</td>
<td>84.6°F (8.6°F higher than intake temperature)</td>
<td>73°F/75°F</td>
</tr>
<tr>
<td>7/12/19</td>
<td>Zero discharge via EFF002</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7/24/20</td>
<td>Zero discharge via EFF002</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>8/13/21</td>
<td>337 MGD</td>
<td>79.4°F (17.8°F higher than intake temperature)</td>
<td>70°F/71°F</td>
</tr>
</tbody>
</table>

**Table 6**

Furthermore, the 5°F temperature rise limit compared to ambient ocean surface water reference conditions has also been satisfied as outlined in the following discussion.

In 2018, the effluent flow (504 MGD) discharged via outfall EFF002 into King Harbor was the highest amount recorded for a summer monitoring water quality survey over this six-year period and the discharge temperature (84.6°F) also was the highest recorded. Despite this discharge of a large volume of warm water, no increases in surface water temperatures within King Harbor were observed during flood tide conditions and only small increases of approximately 1°F at most were observed during ebb tide conditions (compared to ambient ocean surface water temperatures measured to establish the reference condition during the summer survey). The minor temperature elevation observed was well below the 5°F threshold required by the permit and temperatures did not approach the 86°F threshold at any point throughout the water column.

In 2021, the second highest effluent flow (337 MGD) recorded during summer water quality surveys over this six-year period was discharged via outfall EFF002 into King Harbor. The discharge temperature was lower than in 2018 (79.4°F), but the temperature differential between the intake and discharge points was 17.8°F. Nonetheless, despite this discharge of a relatively large volume of warmer water, only small increases of approximately 2°F were observed in the surface waters of King Harbor during both flood and ebb tide conditions (compared to ambient ocean surface water temperatures measured to establish the reference condition during the summer survey). The minor temperature elevation observed was still well below the 5°F threshold required by the permit and temperatures did not approach the 86°F threshold at any point throughout the water column.

The lower effluent flows discharged via outfall EFF002 into King Harbor at the time of the summer water quality surveys in 2016 (159 MGD) and 2017 (55 MGD) also resulted in minor temperature elevations that were well below the 5°F threshold required by the permit and temperatures did not approach the 86°F threshold at any point throughout the water column.

Considering historic discharge temperature data, limited operational profile of unit 8, results of the periodic summer/winter testing, the identified need by the SACCWIS for units 5, 6, and 8 to support electric system reliability through December 31, 2023, and the approval by the State Water Board to extend the OTC compliance date to December 31, 2023, Redondo Beach respectfully asks for a limited
interim instantaneous maximum discharge temperature limit for EFF002 of 102°F for the period May – October until December 31, 2023.

Alternatives

Given the very short operational extension period that Redondo Beach unit 8 is required for grid support, there are no feasible engineering alternatives that could be implemented to show compliance before December 31, 2023. The modified, limited TSO for instantaneous maximum discharge temperature reflects the longstanding commitment to meet NPDES temperature limits by unit retirements.

Revised Limit Request

Redondo Beach requests an interim instantaneous maximum discharge temperature limit of 102°F for EFF002 for the period May – October only. Compliance with NPDES limits will be achieved by permanent shutdown of units 5, 6, and 8 by December 31, 2023.

Summary

After an extensive review of the operating data since the original TSO was issued in 2016, Redondo Beach respectfully requests the State Water Board to consider this modified, narrower TSO application. This modified, narrower TSO application:

- **Removes** previous TSO interim limits for certain parameters
  - Copper, nickel, and pH from EFF002 (unit 8) due to sustained compliance
  - pH from INT001A (retention basin) due to compliance
- **Retains**
  - TSO interim limits for DDT for EFF001 (units 5 & 6) and EFF002 (unit 8)
  - TSO instantaneous maximum outlet temperature interim limits and reduces them from 106°F to 102°F for EFF002 (unit 8) and for May – October only

Redondo Beach respectfully asks that the State Water Board consider this modified, narrower TSO application as expeditiously as possible and with an effective date of January 1, 2022, so that Redondo Beach can continue to support electric system reliability through December 31, 2023, as determined by the SACCWIS and approved by the State Water Board.

Our sincere appreciation to you and your team for your consideration of this request. Our team stands ready to support your expedited review due to the expiration of the existing TSO on December 31, 2021, and the ongoing needs and obligations of units 5, 6, and 8 to support the reliability of the electricity grid in California.

Please do not hesitate to contact Coury McKinlay at 949-554-9827 or coury.mckinlay@aes.com.

Yours truly,

Mark Miller
AES California Market Business Leader and General Manager, Southland
Enclosures
3. Proposed TSO R4-2021-XXXX, NPDES Permit No. CA0001201 (Sept. 15, 2021)
5. Amendment to the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling to Extend the Compliance Schedule for the Redondo Beach Generating Station, Final Staff Report – State Water Resources Control Board (Oct. 19, 2021)
6. Statewide Advisory Committee on Cooling Water Intake Structures Final Recommended Compliance Date Extensions for Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach Generating Stations (Jan. 23, 2020)
7. State Water Resources Control Board Resolution No. 2020-0029 (Sept. 1, 2020)

cc: Lorraine Paskett, AES
    Weikko Wirta, AES
    Jose Perez, AES
    Coury McKinlay, AES