

State of California
Regional Water Quality Control Board
San Diego Region

EXECUTIVE OFFICER SUMMARY REPORT
May 12, 2010

ITEM: 13

SUBJECT: NPDES Permit Termination: Dynegy South Bay LLC, South Bay Power Plant Discharge to San Diego Bay, Order No. R9-2004-00154, NPDES No. CA0001368 (Tentative Order No. R9-2010-0062) (Kristin Schwall, Chad Loflen, and Robert Pierce)

PURPOSE: The San Diego Water Board will receive testimony, technical evidence, and supporting documentation relevant to determining:

a) Whether South Bay Power Plant intake and discharge operations endanger human health or the environment and can only be regulated to acceptable levels by NPDES permit modification or termination [see 40 Code of Federal Regulations, section 122.64(a)(3)]; and

b) Whether any effects identified in Item a) above provide a sufficient basis for the San Diego Water Board to require that South Bay Power Plant discharges be terminated earlier than December 31, 2010 and prior to California Independent System Operators (CAISOs) release of Units 1 and 2 from "Reliability Must Run" (RMR) status.

PUBLIC NOTICE: A Notice of Public Hearing was published in the San Diego Union Tribune on February 4, 2010. A copy of the Notice of Public Hearing was sent by e-mail to all designated parties and a preliminary list of interested parties on January 22, 2010. The Notice of Public Hearing was also posted on the San Diego Board's web site on January 25, 2010. This item was listed on the March 10, 2010, Board Meeting agenda notice that was mailed to the San Diego Board's agenda mail list of interested persons.

A Notification of Additional Designated Parties was sent by e-mail to all designated parties and interested parties on February 9, 2010 and was posted on the San Diego Board's web site on February 10, 2010.

The March 10, 2010 hearing was postponed until May 12, 2010.

Another Notice of Public Hearing was published in the San Diego Union Tribune on March 22, 2010. A more detailed copy of this Notice of Public Hearing with the tentative termination order and Staff Report were sent by e-mail to all designated parties and interested persons and posted on the San Diego Water Board's web site on March 23, 2010. This item was listed on the May 12, 2010, Board Meeting agenda notice that was mailed to the San Diego Board's agenda mail list of interested persons.

DISCUSSION:

Current Receiving Water Quality Conditions¹

Discharges from the South Bay Power Plant (SBPP), located on the southeastern shore of San Diego Bay in the City of Chula Vista, have had impacts on the waters of south San Diego Bay since 1960 when operations began. The SBPP, currently operated by Dynegy South Bay, LLC. (Dynegy), uses the waters of San Diego Bay for once-through cooling (OTC) of its electric generating units. Each unit is supplied by two circulating water pumps. The quantity of water circulated through the plant is dependent upon the number of pumps in operation. When all pumps (including Units 3 and 4) were in operation, the water circulating through the plant was 601 million gallons per day (MGD). After passing through the plant, the circulating water is discharged through a channel that continually mixes with San Diego Bay water. Units 3 and 4 were permanently shut down as of December 31, 2009, leaving Units 1 and 2 in operation. This resulted in the reduction of maximum flow rate from 601 MGD to 225 MGD (63 percent reduction). It is reasonable to predict that this reduction in flow also results in reduced adverse impacts on the water quality and beneficial uses of San Diego Bay. Furthermore, based on actual flow rates from January 1, 2010 through March 2010, the SBPP's projected annual average flow for 2010 would be approximately 54 MGD, which represents less than one fourth of its current maximum permitted level.

In adopting existing National Pollutant Discharge Elimination System (NPDES) Order No. R9-2004-00154 and the associated fact sheet, the San Diego Water Board

¹ "Current Receiving Water Quality Conditions" is a new standard section the San Diego Water Board will see in Executive Officer Summary Reports for most NPDES-related agenda items.

recognized that the discharge from the SBPP impacts San Diego Bay receiving waters. The requirements of Order No. R9-2004-00154 were developed taking into account those impacts. Dynegy has been and continues to be in compliance with the requirements of the Order.

Effects on the beneficial uses and water quality of south San Diego Bay caused by the currently configured SBPP are described below. The discussion below represents a summary of discussion in the Staff Report contained in Attachment 1 to tentative Order No. R9-2010-0062, *STAFF REPORT, Dynegy South Bay, LLC, South Bay Power Plant Evaluation of Water Intake and Wastewater Discharge Effects on San Diego Bay and Consideration of Termination of Discharge*, dated March 22, 2010. More detailed information concerning these impacts and supporting references are contained in the Staff Report.

1) Copper - There is copper loading to San Diego Bay from the shell and tube heat exchanger for Unit 2, which is made of copper-nickel based material. Note that the tubing material used in the Unit 1 condenser is made of stainless steel containing alloying elements of chromium, molybdenum and nickel. Unit 1 does not contain copper elements. The discharge is in compliance with copper effluent limitations based on the California Toxics Rule.

2) Chlorine – Chlorine is added as a biocide to minimize the growth of algae and slime within the condenser tubes to maintain heat transfer efficiency. The SBPP operates the chlorination system intermittently to reduce the impact on the receiving water. The discharge is in compliance with the chlorine effluent limitations based on a site specific toxicity evaluation.

3) Temperature – Heat is added to the OTC water obtained from the intake channel at the SBPP to condense the steam generated from Units 1 and 2. The elevated temperature OTC water is discharged back to the San Diego Bay in the discharge channel. The naturally low-mixing, shallow water at the SBPP intake can be as high as 85 °F (30 °C). The effluent temperature could be as much as 25 °F higher than the intake water (instantaneous maximum temperature limitation contained in Order No. R9-2004-00154) when the plant operated at peak load (601 MGD). This resulted in discharge temperatures as high as 100 °F (38 °C) for several hours of the day and occasionally briefly higher. Since the latest temperature evaluation, the flow has been reduced by 63 percent and the thermal compliance point has been moved closer to the point of discharge, from a location out in the discharge channel to a location at the SBPP property line. A 2010 evaluation by Dynegy under the current reduced flow conditions using only the 2 currently permitted units found that the volume of the present thermal plume is 63 percent smaller, and the temperature is 4 to 5 °F cooler at the point of discharge.

4) Dissolved Oxygen – A reduction in the dissolved oxygen (DO) concentration occurs due to the elevated water temperatures. This increases the metabolic rates of animals, which in turn increases their oxygen demand. Metabolic rates have been shown to

double every 18°F (10°C). Due to the termination of discharges from Units 3 and 4, there is a 63% reduction in flow as of the end of 2009 and an associated unquantified reduction in DO impacts.

5) Sediment Load - The circulating water pumps at the SBPP influence the distribution of turbid water within south San Diego Bay. The distribution of particle sizes within soft sediment marine environments is a significant factor affecting the composition of infaunal assemblages, and the suspension of fine sediments by currents can increase turbidity thus decreasing light penetration through the water column and affect the growth of bottom vegetation. The power plant cooling water flows alter the South Bay turbidity distribution by drawing clearer waters southward along the deeper navigational channels on the eastern portion of the bay and expanding turbidity plumes along the western portion of the South Bay.

6) Eelgrass – Turbidity and thermal effects of the SBPP cooling water flows preclude eelgrass from growing in certain areas of south San Diego Bay. It was estimated that operating at maximum cooling water circulation rates (i.e. 601 MGD), eelgrass would be precluded from approximately 104 acres of south San Diego Bay, including the entire discharge channel and areas of South Bay immediately west and north of the Chula Vista Wildlife Island. The preclusion of eelgrass from the discharge under current maximum discharge conditions of 225 MGD is unknown, but is predicted to be less than the amount caused by flows of 601 MGD.

7) Benthic Organisms - The biotic communities in the immediate vicinity of the discharge point and in the discharge channel have been degraded by exposure to the OTC water discharge from the SBPP. The degradation to the biotic communities is due to several factors, including elevated temperature, flow volume, and flow velocity. Impacts are likely to be reduced due to the reduction in flow and the moving of the thermal compliance point closer to the point of discharge at the SBPP property line.

8) Turtles - The SBPP discharge channel is a key habitat for Eastern Pacific Green Sea Turtles, an endangered species. The warm water increases growth rates of the turtles, helping the population to recover more quickly from former exploitation (unrelated to the SBPP). The aggregation of green turtles in and around the plant indicates that this is a good quality, inviting habitat. Because green turtles do not depend on eelgrass in the bay, the health of the eelgrass systems does not affect the turtles. These turtles reside in San Diego Bay, and it is anticipated that the turtles will remain in San Diego Bay, with or without the warm water associated with the power plant discharge.

9) Entrainment and Impingement of Marine Organisms - As recognized in Order No. R9-2004-0154 and elsewhere, OTC causes adverse ecosystem impacts when marine organisms are trapped against the SBPP's pump intake screens ("impinged") and cannot escape, or when they suffer contact injuries that increase mortality. Additionally, smaller marine organisms, such as larvae and eggs, can be drawn through the screens and directly into the SBPP's entire cooling system ("entrained"). Entrained organisms are subjected to pressure and temperature changes, chemical treatment systems, and

violent sheering forces. These smaller marine organisms are subsequently discharged, dead or in dire health, back into the receiving waters of southern San Diego Bay. With the full flow of 601 MGD, the estimated maximum total annual abundance of impinged fishes at SBPP was 385,588 fish with a biomass of 556.2 kg (1,226.4 lb). About 20 percent of the total abundance and 14 percent of the biomass of fishes impinged are attributed to Units 1 and 2 which are the units currently permitted. With the full flow of 601 MGD, 13 percent of the anchovies adult population, 15.1 percent of the silverside adult population in the source water would be lost annually due to larval entrainment losses. Approximately 27 percent of the goby complex larval population and 50 percent of the longjawed mudsucker larval population would be lost annually due to entrainment.

Clean Water Act Section 303(d) Listing

San Diego Bay is currently listed as impaired for Polychlorinated biphenyls (PCBs) on the State Water Resources Control Board's Final 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments. Accordingly San Diego Bay is on the list for development of a Total Maximum Daily Load (TMDL) for PCBs.

Environmental Outcome of Tentative Order²

If adopted, tentative Order No. R9-2010-0062 would terminate Order No. R9-2004-0154, NPDES No. CA0001368, as of December 31, 2010 or on the date that the CAISO determines that Units 1 and 2 are no longer designated as reliability must run units, whichever occurs first. Because the current Order No. R9-2004-00154 already contains provisions for termination of discharges with these same dates, adoption of tentative Order No. R9-2010-0062 by itself would have a negligible effect on the environment. However, it would affirm the time schedule for termination of the discharges from the SBPP under the current permit terms and conditions. If the Board takes no action, the discharges from Units 1 and 2 will also terminate not later than December 31, 2010. Discharges may only be authorized beyond 2010 by adoption of a new NPDES permit for Dynegy.

After discharges from the SBPP are terminated, the effects of the discharges will diminish and the process of restoration of the water body can begin. However, as the Tentative Order recognizes, Dynegy may submit a new application for an NPDES permit to allow discharges to continue beyond 2010. If the San Diego Water Board receives such an application, any proposed action to deny or adopt an NPDES permit based on such an application will be considered in a separately noticed proceeding. Whether proposed discharges would be allowed to continue beyond 2010, and under what conditions, cannot be resolved at the May 12, 2010, hearing on the Tentative Order. If Dynegy wishes to continue the SBPP discharges after December 31, 2010, Dynegy must obtain a new NPDES Order from the San Diego Water Board.

² "Environmental Outcome of Tentative Order" is a new standard discussion section that will be presented in EOSRs for some NPDES-related agenda items.

Background

The SBPP is a gas and oil fueled electrical power generating plant, operated by Dynegy South Bay, LLC (Dynegy) and located on the southeastern shore of San Diego Bay in the city of Chula Vista, approximately 16 km (10 miles) north of the U.S.-Mexican border. The plant has four major steam cycle units with a net generating capacity of 723 megawatts electric (MWe). Each unit can generate independently or in conjunction with any other unit. Generation typically cycles on a daily basis in response to demand for electricity.

The SBPP discharge is regulated under NPDES Order No. R9-2004-0154 (NPDES Order) (Supporting Document No. 3), adopted by the San Diego Water Board in November 2004. The NPDES permit as originally adopted contained an expiration date of November 10, 2009. Dynegy, the operator of SBPP, satisfied the legal requirements for an administrative extension of the original 2004 permit by submitting a timely and complete application on April 10, 2009 for the reissuance of the SBPP NPDES Order.

Dynegy updated the NPDES application by letters dated October 16, 2009 and October 19, 2009 regarding the schedule for anticipated shutdown and closure of the South Bay Power Plant. Dynegy has requested to continue operation of electrical generating Units 1 and 2 under the current NPDES permit at a reduced maximum flow-rate of 225 MGD until December 31, 2010 based on the following considerations:

- The California Independent System Operator (CAISO) has terminated the Reliability-Must-Run (RMR) contract for South Bay Power Plant electrical generating Units 3 and 4 such that operation of these units, and use of the associated discharge outfalls, will not be required after December 31, 2009; and
- CAISO extended the RMR contract for Units 1 and 2 for the 2010 contract year until December 31, 2010. The conditions that would allow for termination of RMR service for Units 1 and 2, including the addition of new generation and reactive power in the San Diego area, are expected to be achieved in 2010. Consequently, operation of these units, and the use of the associated discharge outfalls, at this time are not expected to be required after December 31, 2010. If a new RMR contract is issued for the SBPP to operate beyond December 31, 2010, a new NPDES permit would still be required.

Based on Dynegy's supplemental information, the NPDES Order was modified on November 9, 2009 to incorporate the schedule for flow reduction to 225 MGD by December 31, 2009 and the termination of all discharges with the anticipated shutdown of Units 1 and 2 by December 31, 2010 or on the date CAISO determines that RMR services from Units 1 and 2 are no longer needed, whichever occurs first. A copy of Order No. R9-2004-0154 (including Monitoring and Reporting Program and Fact Sheet) as amended on November 9, 2009 is included as Supporting Document 3.

By letter dated January 11, 2010, Dynegy reported that Units 3 and 4 were shut down as of December 31, 2009, resulting in the reduction of maximum flow rate from 601

MGD to 225 MGD (63 percent reduction). Unit 3 last operated on December 10, 2009 and Unit 4 last operated on November 3, 2009.

The January 22, 2010 Public Hearing Notice (Supporting Document 2) established the procedures for conducting the hearing including identifying Dynegy and No More South Bay Power Plant Coalition as designated parties and documenting the procedure for requesting status as a designated party. The San Diego Water Board received requests for designated party status from City of Chula Vista (Supporting Document 6) and the California Independent System Operator Corporation (Supporting Document 7). By Notice dated February 9, 2010 (Supporting Document 8), the San Diego Water Board granted both requests.

Pursuant to the January 2010 Notice of Public Hearing (Supporting Document 2), the San Diego Water Board received submittals from designated parties and interested persons including Dynegy South Bay, LLC (Supporting Document 9), the No More South Bay Power Plant Coalition (Supporting Document 10), the California Independent System Operator Corporation (Supporting Document 11), the City of Chula Vista (Supporting Document 12), the City of Coronado (Supporting Document 13), and the National Oceanic and Atmospheric Administration (Supporting Document 14).

The San Diego Water Board has received rebuttal submittals from designated parties including Dynegy South Bay, LLC (Supporting Document 15), the No More South Bay Power Plant Coalition (Supporting Document 16), the California Independent System Operator Corporation (Supporting Document 17), and the City of Chula Vista (Supporting Document 18).

On March 22, 2010, the San Diego Water Board released for public comment and review: Tentative Order No. R9-2010-0062, *An Order Terminating Order No. R9-2004-0154 NPDES Permit No. CA0001368, Waste Discharge Requirements for Dynegy South Bay, LLC (Formerly owned by Duke Energy South Bay, LLC), South Bay Power Plant, San Diego County* (Supporting Document 21) and the *Staff Report, Dynegy South Bay, LLC, South Bay Power Plant, Evaluation of Water Intake and Wastewater Discharge Effects on San Diego Bay and Consideration of Termination of Discharge, March 22, 2010* (Staff Report)(Supporting Document 22). The March 22, 2010 Public Hearing Notice (Supporting Document 19) establishes additional procedures for conducting the hearing and established a period for commenting in writing on the Tentative Order, ending on April 21, 2010. The Staff Report does not identify any new or additional impacts beyond those already identified and considered in Order No. R9-2004-0154 and concludes that allowing discharges to continue for the remainder of the permit term does not, in the short term, pose an unacceptable risk to human health or the environment within the meaning of 40 CFR section 122.64(a)(3). Therefore, the Tentative Order allows discharges from Units 1 and 2 to continue under the current permit (as amended in November 2009) until December 31, 2010 or the date on which the CAISO determines that Units 1 and 2 are no longer designated as needed for reliability, whichever is earlier. The Tentative Order does not find that impacts from the SBPP discharges are of sufficient magnitude to require immediate termination of

discharges from Units 1 and 2.

The San Diego Water Board has received comments from designated parties and interested persons including Dynegy South Bay LLC (Supporting Document 23), No More South Bay Power Plant (Supporting Document 24), CAISO (Supporting Document 25), City of Chula Vista (Supporting Document 26), and a political delegation from Chula Vista (Supporting Document 27). A Response to Comments document and Errata Sheet, as necessary, will be included with the supplemental agenda package.

Once-Through Cooling

The SBPP is one of 19 power plants in California that are currently permitted to withdraw water from the ocean, bays, or estuaries for electrical energy production using a single-pass system, also known as once-through cooling (OTC). Order No. R9-2004-0154 as originally adopted contains requirements to develop a plan to comply with federal Clean Water Act (CWA) Section 316 (b) for technology-based measures to minimize adverse environmental impacts from cooling water intake structures. However, by memo dated March 20, 2007, the USEPA suspended the then-existing CWA 316(b) Phase II regulations establishing uniform performance standards for large existing power plants as a result of litigation. The suspension of the CWA 316(b) Phase II regulations caused the San Diego Water Board to suspend requirements for SBPP to comply with these regulations.³ There are currently no federal or state standards for implementing CWA section 316(b) at existing power plants. The status quo is that in any affected permit reissuance, the regional water boards must use their best professional judgment to implement section 316(b) when re-issuing NPDES permits.

On May 4, 2010, the State Water Resources Control Board plans to consider adoption of the Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-through Cooling Policy or OTC Policy). The Notice of Adoption Meeting, the draft final policy, the draft final Substitute Environmental Document and the draft responses to comments have been posted at http://www.waterboards.ca.gov/water_issues/programs/npdes/cwa316.shtml.

The proposed Policy establishes technology-based standards to implement CWA section 316(b) intended to reduce the harmful effects on marine and estuarine life associated with cooling water intake structures. The proposed Policy would apply to the 19 existing power plants, including SBPP, that currently have the ability to withdraw over 15 billion gallons per day from the State's coastal and estuarine waters using a single-pass system, also known as once-through cooling.

The proposed Policy includes compliance schedules for each of the 19 existing coastal

³ By letter dated June 1, 2007 (Supporting Document 4), the San Diego Water Board Executive Officer suspended Section E.1 of Order No. R9-2004-0154, which contains requirements for the Discharger to investigate impingement and entrainment impacts from OTC and develop a plan to implement federal Clean Water Act (CWA) Section 316 (b) requirements for technology-based measures to minimize adverse environmental impacts from cooling water intake structures in accordance with the CWA 316(b) Phase II regulations

power plants to implement the technology-based standards which are intended to achieve significant reductions in the use of ocean water. If this OTC Policy is adopted, SBPP will be required in any permit reissuance to come into compliance by December 31, 2012, although at present the proposed Policy contains provisions for suspension of final compliance dates under certain circumstances where the CAISO determines that continued operation is necessary to maintain grid reliability. If the proposed Policy is adopted, staff will evaluate how the final language would be applied to any permit reissuance should Dynegy submit an application to discharge at SBPP beyond 2010.

Other Considerations

As a separate matter, Dynegy is working closely on evaluating the potential environmental impacts associated with the shutdown, demolition and remediation of the SBPP with the Unified Port of San Diego (Port), which is the lead agency for purposes of compliance with the California Environmental Quality Act (CEQA). Other responsible agencies that may be commenting during this CEQA process include California Department of Fish and Game, National Marine Fisheries Service, the Army Corps of Engineers, U.S. Fish and Wildlife Service and the San Diego Water Board. The CEQA process will be initiated with submittal of the Tenant Project Application and Environmental Document by Dynegy.

The Port's review process of Dynegy's environmental document submittals could be up to 90 days, which is followed by the Port Board of Commissioner approval hearing to be held at a public board meeting. At that time, the Port will hire a third party consultant to work with Dynegy and the Port on the Environmental Impact Report (EIR) for CEQA. This process is projected to take up to eighteen months and is expected to include performing several studies and surveys defining impacts from the shutdown and demolition of SBPP. It is anticipated that a draft Environmental Impact Report will be prepared for the Project for review by the Port and all responsible commenting agencies. The San Diego Water Board will continue to participate in this on-going CEQA process.

The San Diego Water Board's jurisdiction and potential involvement in other aspects of the shutdown, demolition, and remediation of the SBPP, including mitigation for alleged impacts to San Diego Bay by the power plant discharge is under evaluation. The San Diego Water Board's action at today's meeting is limited to considering testimony, technical evidence, and supporting documentation relevant to the issues listed in the purpose above. San Diego Water Board staff will make recommendations on addressing other ancillary environmental issues associated with the power plant shutdown and mitigation for alleged impacts to San Diego Bay by the power plant discharge of the SBPP discharge at a future Board meeting and as the CEQA process unfolds.

LEGAL CONCERNS: None

SUPPORTING DOCS FROM POSTPONED MARCH 10, 2010 AGENDA PACKAGE:

(These documents were included with the March 10, 2010 agenda package and are being provided electronically.)

1. Location Map
2. Notice of Public Hearing dated January 22, 2010
3. NPDES Order No. R9-2004-00154, including Monitoring and Reporting Program and Fact Sheet, as amended on November 9, 2009.
4. San Diego Water Board Letter dated June 1, 2007 suspending Section E.1 of Order No. R9-2004-00154.
5. Dynegy South Bay, LLC Letter dated January 11, 2010 – NPDES Order Compliance Status Update.
6. Request for Designated Status by the City of Chula Vista
7. Request for Designated Status by the California Independent System Operator Corporation
8. San Diego Water Board Notice of Additional Designated Parties
9. Dynegy South Bay, LLC submission dated February 22, 2010 including Attachments 1-37
10. No More South Bay Power Plant Coalition submission dated February 22, 2010 including a thumb drive with Attachments.
11. California Independent System Operator Corporation submission dated February 22, 2010.
12. City of Chula Vista submission dated February 22, 2010.
13. City of Coronado Resolution dated January 19, 2010.
14. National Oceanic and Atmospheric Administration submission dated February 18, 2010.

SUPPORTING DOCS FOR MAY 12, 2010 AGENDA PACKAGE:

(New documents provided in hard copy and electronically with this agenda package.)

15. Dynegy South Bay, LLC rebuttal dated March 2, 2010 from Pillsbury Winthrop Shaw Pittman LLP
16. No More South Bay Power Plant Coalition rebuttal dated March 3, 2010.
17. California Independent System Operator Corporation rebuttal dated March 3, 2010.
18. City of Chula Vista rebuttal dated March 3, 2010 from Foley & Lardner LLP.
19. Notice of Public Hearing dated March 22, 2010
20. Transmittal letter for Tentative Order No. R9-2010-0062 and Attachment 1 dated March 22, 2010
21. Tentative Order No. R9-2010-0062

22. Attachment 1 to Order No. R9-2010-0062, STAFF REPORT, Dynegy South Bay, LLC, South Bay Power Plant, Evaluation of Water Intake and Wastewater Discharge Effects on San Diego Bay and Consideration of Termination of Discharge, March 22, 2010.
23. Dynegy South Bay, LLC comment letter dated April 20, 2010 from Pillsbury Winthrop Shaw Pittman LLP
24. No More South Bay Power Plant Coalition comment letter dated April 21, 2010.
25. California Independent System Operator Corporation comment letter dated April 21, 2010.
26. City of Chula Vista comment letter dated April 21, 2010.
27. US Congressman Bob Filner, State Senator Denise Moreno Ducheny, State Assemblymember Marty Block, State Assemblymember Mary Salas, San Diego County Supervisor Greg Cox, Chula Vista City Councilmember Steve Cataneda, Chula Vista City Councilmember Pamela Bensoussan, and San Diego City Councilmember Ben Hueso comment letter dated April 20, 2010.

RECOMMENDATION: Adoption of Tentative Order R9-2010-0062 is recommended.