December 1, 2009

Chairman Wright and Boardmembers
California Regional Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Re: NPDES Permit Minor Modifications: Dynegy South Bay LLC, South Bay Power Plant Discharge to San Diego Bay, Order No. R9-2004-0154, NPDES No. CA0001368 (December 16 Hearing, Agenda Item 14)

Dear Chairman Wright and Boardmembers:

On behalf of Coastkeeper, a local non-profit working to protect San Diego County's bays, beaches, watersheds, and ocean for people and wildlife that depend on them, and Environmental Health Coalition (EHC), a grassroots organization dedicated to protecting public health and the environment threatened by toxic pollution please accept these comments on the National Pollution Discharge Elimination System (NPDES) permit for the South Bay Power Plant (SBPP) action scheduled for your December 14 agenda.

Thank you for scheduling this hearing. This issue deserves your attention because SBPP causes serious environmental damage to a precious waterway in need of the Board's protection.

The Board must seize this important opportunity to carry out its mission and exercise its authority to protect the beneficial uses of the South Bay

Multiple federal and state agencies, including the Environmental Protection Agency (EPA), California Energy Commission (CEC), Ocean Protection Council (OPC), and State Lands Commission (SLC), have recognized that once-through cooling (OTC) plants, such as SBPP, cause significant, ongoing devastation to our valuable marine resources. In June of 2005, the CEC released a comprehensive staff report identifying OTC as a contributing factor to the degradation of California's fisheries, estuaries, bays and coastal waters.[1] However, a statewide policy to eliminate OTC plants remains months, if not years, away, as do new regulations from the EPA.

Meanwhile, SBPP continues to pollute and degrade the South Bay and surrounding communities under its NPDES permit, and even after its NPDES permit expired this year. Yet, the Board is uniquely placed to redress the harms of OTC in the South Bay, even more expeditiously than the statewide initiative. The Board can exercise its best professional judgment to rescind the permit, close SBPP, and thereby realize its vital role of protecting the waters of the South Bay. The Board can and must act.

Recently, in response to pressure from the public, the ISO removed the reliability designation from units 3 and 4 at SBPP as of January 1, 2010, but even this laudable progress will not prevent SBPP from devastating sensitive habitats: SBPP will continue to operate units 1 and 2, intake millions of gallons of water from the Bay daily, and discharge millions of gallons of heated water polluted with copper, chlorine, zinc, and nickel into the South Bay and sensitive habitats in the discharge channel. The intake

[1] California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Available at: www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF. (CEC Staff Report).

and discharge of water from SBPP ravages the sensitive local ecosystem in many ways: the release of toxics, heated water, and sediments reduces oxygen supplies to marine life, destroys eel grass around SBPP, and destroys and harms mussels in the discharge channel; and the intake of water destroys many juvenile fish and larvae that die when they travel through SBPP cooling structures, and traps thousands more adult fish against intake screens, also killing them. When SBPP intakes water and releases it to the Bay it causes significant environmental harms. But the Board has the authority to rescind the NPDES permit that allows SBPP to operate and stop the destruction of precious habitats. And we urge the Board to do so.

The Board can legitimately rescind the permit under the Clean Water Act (CWA). Regulations promulgated under the CWA authorize the Board to rescind an NPDES permit when the permitted activity harms human health or the environment, and the Board can only reduce the harms to an appropriate level by terminating or modifying the permit.[2] Further, the CWA requires the Board to ensure SBPP operates with the best technology available. Numerous authorities agree, OTC does not qualify as the best technology available.

This letter details how SBPP has severely and negatively impacted the water quality in the South Bay, how SBPP will continue to do so, even with two units shut down in 2010, and how the Board can only reduce the harms to the environment to an acceptable level by rescinding SBPP's NPDES permit.

The reasons the Board must close the remaining two units at SBPP are outlined below. These comments reflect a condensed presentation of the data available. Wherever possible, links to more detailed information are given in footnotes. A useful overview of impacts associated with SBPP is available in the EHC publication, "Deadly Power."[3]

I. The evidence is clear – SBPP's discharge has major negative impacts on water quality, despite NPDES permit requirements

Under the current NPDES permit SBPP releases heated water, chlorine, copper, zinc, and nickel into the South Bay and thereby causes substantial and cumulative harms to the delicate ecosystem. Harms to the Bay are made even more severe by the low flow volume and velocity of water in the Bay. The findings adopted in the NPDES permit confirm the degradation caused by SBPP:

> The biotic communities in the immediate vicinity of the discharge point and in the discharge channel have been degraded by exposure to once-through-cooling water discharge from the SBPP. . .
>
> The beneficial uses that may be impaired due to the effect of the SBPP discharge on water quality include: Estuarine Habitat; Marine Habitat; Wildlife Habitat; Preservation of Rare and Endangered Species; Preservation of Biological Habitats of Special Significance; and Shellfish Harvesting.[4]

[2] See 40 C.F.R. § 122.64(a) (Deering 2009).
[3] Carlin, Elaine M. et al, 2001, *Deadly Power*, Prepared for the San Diego Bay Council
[4] NPDES Permit CA0001368FP p. 4.

Additionally, the current NPDES permit notes the only way to stop the destruction to the South Bay is to close SBPP:

> It is evident that the impacts on Beneficial Uses due to the discharge of once-through-cooling water cannot be completely eliminated except through the termination of the discharge. The adverse impacts are due to the individual combined and effects of the elevated temperature and the volume and velocity of discharge.[5]

A. Heated water depletes vital oxygen supplies in the Bay, increases the negative impacts of toxics, and destroys important wildlife in the discharge channel

The current NPDES permit allows SBPP to discharge heated water into the Bay with an average daily temperature Delta of 15 degrees Fahrenheit (F) and an instantaneous Delta of 25 degrees F, but according to the permit findings these requirements "do not fully ensure protection of water quality needed for attainment of the beneficial uses of South San Diego Bay as required by the *Basin Plan* and *State Thermal Plan*."[6] In addition, the current permit includes no maximum temperature for discharges, and only regulates them as a delta temperature from the intake.

Contrary to the requirements of the *Basin Plan*, the high temperatures in the Bay degrade critical habitats. Under the current NPDES temperature requirements, the plant can discharge water to the Bay in excess of 100 degrees F. Such high temperatures increase the toxic effects of copper, nickel, and zinc – all chemicals released by SBPP. In addition to toxic effects, high temperatures negatively impact marine organisms. High temperatures decrease oxygen level in the water, and simultaneously increase the need for marine life to consume oxygen. Thus, high temperatures have a particularly devastating impact on vital oxygen supplies to marine life, and at the same time increase the toxicity of chemicals released from SBPP. The release of water from SBPP transforms a habitat that supports sensitive species into one that threatens their survival.

In addition to the impacts in the Bay, high temperatures in the discharge channel negatively impact prime intertidal habitat.[7] Heated water in the discharge channel kills clams, mussels and other organisms that reside there.[8] Clams that do survive the heated water, face additional harms because heated discharge also negatively affects their growth and reproductive characteristics.[9]

Some worry closing SBPP will threaten the colony of green turtles that live in the Bay because they believe the turtles thrive on warm water released from SBPP and would not survive a decrease in temperature accompanying the closure of SBPP. However, not all scientists agree that the green turtle colony lives there because of the heated water. In fact, Jeff Seminoff, of the Marine Turtle Research

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[5] Id.
[6] Id. at 5.
[7] Michael, Brandman Associates, Philip Williams & Associates, Ltd., and TRC Environmental Consultants, 1990, *Preliminary Report of City of Chula Vista: (SDG&E) 89-NOI-1*, p. III-15.
[8] Ford et al, 1970, *Ecological effects of power station cooling water in South San Diego Bay during August 1970*, Prepared for the San Diego Gas & Electric Co.,
[9] Merino, Jose-Maria, 1981, *A Study of the Temperature Tolerances of Adult Solen rosaceus and Tagelus californicanus in South San Diego Bay: The Effects of Power Plant Cooling Waste Discharge*, A Dissertation, San Diego State University/University of California Riverside, p. 3

Program for the Southwest Fisheries Science Center, disagrees.[10] He calls the belief that green turtles inhabit the Bay for the tropical water temperatures a myth.[11] Instead, he attributes the presence of the colony to the abundance of eel grass that can be found in San Diego Bay. He states that the Navy plants eelgrass in the Bay outside of SBPP's immediate area, and the eelgrass attract turtles which may travel thousands of miles foraging for food.[12] He believes that even when SBPP closes the turtles will remain because South Bay is their "home."[13]

Even with units 3 and 4 closed, SBPP will release significant amounts of heated water on a daily basis. According to the findings in the NPDES permit, units 1 and 2 can release up to 156,000 gallons per minute (gpm).[14] Thus the Bay's temperature will remain elevated, even after units 3 and 4 close. And since water will continue to flow out of the discharge channels, organisms there will continue to die.

B. SBPP pollutes South Bay with known toxics: Copper, Nickel, and Zinc

SBPP pulls in water from the Bay to condense super-heated steam back into water after it is used to produce power. When the cooled water flows through tubes within the plant, the lining of the tubes corrode and release copper into the water that eventually flows back into the Bay. Zinc waste plates in SBPP, which are designed to reduce corrosion, also release zinc into the cooling water. Nickel has also been found in elevated levels in the cooling water released back into the Bay.

Despite the restrictions on the release of copper from the SBPP, significant quantities still enter the Bay causing harm to marine life. Under the NPDES permit, SBPP may discharge 4.44 micrograms of copper per liter of water as a daily maximum and a daily average not to exceed 3.53 micrograms of copper per liter of water discharged.[15] Even with these restrictions, SBPP releases an estimated 700 pounds of copper into the Bay each year, depending on the range of water the plant releases into the Bay.[16] Copper is a known toxic for marine life.[17]

Copper is considered highly toxic to marine life, even though small quantities are essential.[18] The California Toxics Rule (CTR), which seeks to prevent harm to aquatic life, lists copper as one of its controlled toxics. Considering the low exchange of water in and out of the Bay surrounding SBPP, the release of copper poses a considerable danger of poisoning marine life. Even with just two units from SBPP running under the limitations proposed in the NPDES permit, the Bay would be susceptible to elevated levels of copper. Moreover, the high temperatures in the Bay increase the toxicity of copper and other chemicals. Thus the NPDES permit would not adequately protect marine life, nor take into consideration the cumulative impacts from the plant.

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[10] Atassi, Nasreen, *Searching for San Diego's Sea Turtles and a Job*, San Diego Weekly Reader, Volume 38, Number 17, April 30, 2009.
[11] Id.
[12] Id.
[13] Bahnsen, C. J., *Saving the Green Turtles California's Supersized Turtles Raise Questions About Altered Habitats*: http://www.emagazine.com/view/?4810
[14] NPDES Permit CA0001368FP p. 1.
[15] NPDES Permit CA0001368FP p. 6.
[16] Id.
[17] SPAWARSYSCEN San Diego, 1999, *Cooling Water System Copper Study*, Final Report, p.10
[18] Neff, Jerry F., Bioaccumulation in Marine Organisms Effect of Contaminants from Oil Well Produced Water. San Diego: Elsevier, 2002.

Likewise, SBPP released elevated levels of zinc and nickel into the Bay each year. Although, this figure may decrease with two units closed, it would nonetheless continue to enter the Bay through the remaining two units. When water temperatures rise, the toxicity of zinc and nickel also rise and are especially harmful on juvenile species in the South Bay.[19] SBPP allows toxic chemicals to degrade prime habitat for precious and endangered species.

C. Free chlorine is highly toxic to marine life, and chlorine compounds remain in the water for long periods damaging marine life

OTC power plants, like SBPP, use millions of gallons of chlorine and other chemicals to keep boilers and cooling systems free of mineral and microbial buildup. Thus SBPP uses chlorine because of its known toxicity to marine life. When chlorine enters the Bay it can combine with organic molecules to form chlorinated organic compounds. These compounds remain in the water for long periods of time and can damage marine life. Although de-chlorination of the discharge is done, it is not 100% effective.

Even with the NPDES restrictions on dumping chlorine into the Bay, the amount of chlorine released by SBPP causes significant damage to the Bay and degrades its beneficial uses. According to the NPDES permit, SBPP may discharge chlorine, so long as it does not discharge it from any single operating unit for more than two hours per day.[20] However, this restriction still allows chlorine to enter the Bay and harm the ecosystem.

Additionally, the NPDES permit does not require adequate chlorine monitoring. SBPP releases chlorine for a total of 80 minutes for every four hours the plant operates, thus the levels fluctuate throughout the day, yet samples are taken only twice a month. Since the sampling frequency does not correlate with the fluctuating levels of chlorine in the Bay, the samples do not produce reliable data about the harmful effects of chlorine. However, chlorine is known to be harmful to almost all species of marine life and therefore should not be released in any amount into the Bay.

D. Turbidity from the water released from SBPP destroys eelgrass around the plant and negatively impacts the Bay's delicate ecosystem

Eelgrass (Zostera marina) forms a distinct marine habitat providing vital shelter and food for many bay inhabitants. Eelgrass is absent in the vicinity of the plant, yet plentiful west of the plant and in other areas of the South Bay that are not so heavily impacted by the power plant discharge. Eelgrass is highly dependent on sufficient light to thrive, and declines in seagrass abundance have been linked to decreasing water transparency.[21] In addition, the intake channel is dredged to a depth that doesn't allow eelgrass to grow—another negative impact on the bay's resources. Without the power plant discharge, we would expect a resurgence of eelgrass beds.[22]

[19] Lloyd, 1960, and Lloyd and Herbert, 1962, as cited in Wetherley, Alan H., "Zinc Pollution and the Ecology of the Freshwater Environment."
[20] NPDES Permit CA0001368FP p. 14.
[21] Carlin, Elaine M. et al, 2001, *Deadly Power*, Prepared by the San Diego Bay Council, p. 29.
[22] Id. at 30.

E. SBPP causes cumulative harms to the Bay by disturbing the balance of the ecosystem and releasing heated water that increases toxicity of chemicals released from the plant

The South Bay ecosystem, like all ecosystems, is complex and based on many interdependent relationships. Impacts on the environment can cause many changes to the ecosystem that are impossible to predict. However, we do know the ecosystem around SBPP has suffered a decline in biodiversity as a result of the plant's operation.[23]

II. Intake of water at SBPP kills many large fish and juvenile organisms each year, despite the NPDES permit

A. SBPP water intake kills early stage organisms

The SBPP pulls in many early stage organisms when it intakes water. Most, if not all of the organisms that are entrained do not survive. The U.S Department of the Interior studied the impacts of once-through cooling power plants and describes the process well:

> Organisms that are small enough to pass though the plant's intake system are said to be entrained, and many of these organisms may be killed by exposure to mechanical, chemical, or thermal stresses during plant passage. Of particular concern are the early life stages of populations of fish and shellfish that inhabit the adjacent water body or use the area as a spawning or nursery habitat.[24]

Studies of the particular impacts of the SBPP over the years reveal a high impact on aquatic species from entrainment.[25] This is not surprising considering that the SBPP passes cooling water through the power plant many times. Of the water SBPP intakes, one study revealed that at least 31% of cooling water was re-circulated at least once in a two and a half day period.[26]

Moreover, South Bay is spawning and nursery ground for many fish and invertebrates that are vulnerable to entrainment. Large numbers of early life organisms may be affected because the number of organisms entrained is a function of the water volume and the density of organisms in the water.

However, such losses are not known because early life stage organisms were not documented before plant started operation. Even without more precise data, evidence shows the ecosystem of the Bay is impacted. South Bay has different composition and abundance of zoological plankton as compared with

[23] EA Engineering Science, and Technology, 1995, South Bay Power Plant Receiving Water Monitoring Program with Emphasis on the Benthic Invertebrate Community (1977-1994), Prepared for San Diego Gas and Electric Company, San Diego, California.
[24] Boreman, John and C. Phillip Goodyear, 1978, *An Empirical Transport Model for Evaluating Entrainment of Aquatic Organisms By Power Plants*, Power Plant Project, Office of Biological Services, Fish and Wildlife Services, U.S. Department of Interior, p. iii.
[25] San Diego Gas & Electric Co., 1980, *South Bay Power Plant Cooling Water Intake System Demonstration*, Prepared for: California Regional Water Quality Control Board, San Diego, CA, p. 4-3
[26] Id. at 5-4.

the rest of the bay.[27] The reduction of plankton is especially worrisome because South Bay is a rare habitat in California and of a type that is disappearing within the state.[28]

B. SBPP water intake kills and wounds adult fish and invertebrates

The operation of SBPP results in the trapping and killing of fishes and large invertebrates. Adult fishes and invertebrates near the plant intake are drawn in and trapped and killed by either a trash rack or a series of screens. It is estimated that losses due to entrainment were 8 million gobiids, 240,000 anchovies, and 42,000 topsmelt.[29] One study estimated that 28,174 fish were killed by SBPP entrainment in a year.[30] That number represents a significant percentage of the total fish found in San Diego Bay. In addition, entrainment may impact ecosystems in the wider San Diego Bay.[31]

III. SBPP emissions degrade air quality negatively impact human health in nearby communities

Emissions from SBPP negatively impact respiratory health of people living nearby. SBPP emits NOx, a precursor for ozone, and particulate matter.[32] The types of emissions from SBPP have been linked to asthma and respiratory damage.[33] Additionally, many vulnerable people are impacted by the emissions because retirees live nearby, and children attend a nearby school.

Even though closing units 3 and 4 will reduce the amount of emissions, it will not eliminate the negative health impacts caused by SBPP.

IV. The Board has the authority and responsibility to rescind the NPDES permit

A. The Board has the authority to rescind because rescission is necessary to reduce harms to the environment to an appropriate level

The Board has the authority to close SBPP because closure would effectively remediate environmental harms. Under the Clean Water Act regulations the Board may rescind an NPDES permit when the permitted activity harms human health or the environment, and the Board can only reduce the harms to an appropriate level by terminating or modifying the permit.[34]

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[27] Id. at 10-28
[28] U.S. Department of the Navy, Southwest Division, 1999, *San Diego Bay Integrated Natural Resources Management Plan*, Prepared by Tierra Data Systems, pp. 2-40
[29] San Diego Gas & Electric Co., 1980, *South Bay Power Plant Cooling Water Intake System Demonstration*, Prepared for: California Regional Water Quality Control Board, San Diego, CA, p. 10-49.
[30] Id. at 7-2.
[31] Fritz, et al, 1980, *Strategy for Assessing Impact of Power Plants on Fish and Shellfish Populations, Power Plant Project*, Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, p. 20
[32] Steven Moore, San Diego County Air Pollution Control District. Testimony on behalf of APCD before the Public Utilities Commission per an "Order Instituting Investigation into the Adequacy of the Southern California Gas Company and San Diego Gas & Electric Company's gas transmission systems to serve the present and future gas requirements of SDG&E's core and non-core customers" April 25, 2001, p. 8
[33] Id.
[34] See 40 C.F.R. § 122.64(a) (Deering 2009).

Here, SBPP clearly harms the environment. The evidence is presented in more depth in sections I-III of this letter. Moreover, there is clear evidence that the intake of water from the Bay kills fish and juvenile marine organisms through entrainment and impingement; and the release of heated water and toxic pollutants, disrupts the delicate ecosystem of the Bay, and precludes beneficial uses of the Bay, such as endangered and threatened species habitat. Even the current NPDES permit acknowledges that the activities at SBPP harm the environment. The permit states that beneficial uses are impaired and biotic communities degraded by, "by exposure to once-through-cooling water discharge from the SBPP." But, the NPDES permit does not prevent harms to the environment because it allows SBPP to intake large amounts of water and release the heated and polluted water into the Bay.

Closing the plant would immediately and effectively halt the degradation of the Bay. If the plant stopped operation, it would no longer intake water or release heated and polluted water back into the Bay, effectively ending the sources of environmental harm. The NPDES permit reflects this understanding. It states, "It is evident that the impacts on Beneficial Uses due to the discharge of once-through-cooling water cannot be eliminated except through termination of the discharge."[35]

Indeed, the permit states that because of the impacts, SBPP's owner Dynergy must rehabilitate the South Bay through restorative measures after the discharge has been ended. However, restoration is not a reasonable approach to address the harms caused by SBPP while the plant continues to operate. Recently, courts have held that restoration was not an acceptable measure to implement CWA's requirement because the best technology available should be reflected in the location, design, construction, and cooling capacity.[36] Thus, the Board cannot address the environmental impacts through restoration, but rather must prevent the harms in the first place. The Board can most effectively eliminate the environmental harms by closing SBPP.

B. The Board has the responsibility to rescind the NPDES permit because it must protect the region's waterways and uphold the Basin Plan

By allowing SBPP to continue its operation, the Board ignores its mission statement because it does not protect the Bay or ensure its beneficial uses. According to the mission statement the Board must "develop and enforce water quality objectives and implementation plans that will best protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology and hydrology."[37] The beneficial uses for the San Diego Bay include: navigation, recreation, marine habitat, wildlife habitat, commercial and sport fishing, migration of aquatic organisms, spawning and reproduction, shellfish harvesting, rare and threatened species habitat, preservation of biological habitats of special significance, and industrial.[38]

Under the current NPDES permit the operation of SBPP has a severe and negative impact on the water quality in the Bay, and the reduced water quality degrades almost all beneficial uses of the Bay. If the Board allows SBPP to continue operation by administratively extending the current NPDES permit, the

[35] Fact Sheet for Order No. R9-2004-0154, NPDES Permit No. CA 0001368 p. 18
[36] Riverkeeper, Inc. v. U.S.E.P.A., 358 F. 3d 174 (2007).
[37] http://www.epa.gov/waterscience/standards/-wqslibrary/ca/
[38] http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/basin_plan/docs/update102207/chapter2_042507.pdf, p. 2-52

Board will fail to protect the Bay and its beneficial uses. However, the Board can eliminate the harms to the Bay and restore its beneficial uses by rescinding the permit and closing SBPP.

C. Surplus energy production should not be a rationale for continuing SBPP

Finally, the Board had previously allowed SBPP to operate because it recognized SBPP was a reliability must run (RMR) facility for the San Diego Region's energy needs. Today, SBPP no longer provides essential power supplies to the San Diego Region. The Board can no longer justify SBPP's operation on energy needs. Rather, the Board must focus on protecting the Bay. The Board can rescind the NPDES permit under its authority to enforce the CWA, and it should rescind the permit to ensure the beneficial uses of the Bay.

V. Conclusion

At one time, SBPP provided important energy supplies to San Diego County and reflected the best technology for generating that power. However, the era of OTC has long since past. Today SBPP stands as a relic that casts a harmful shadow over the Bay and its surrounding community. But it need not be so.

The San Diego region no longer depends on SBPP to provide for its core energy needs, and therefore the justification for allowing the plant to operate no longer exists. If SBPP remains in operation it will needlessly degrade precious marine habitat and deprive the community of many beneficial uses of the Bay. But the Board can reintroduce health and vitality to this beleaguered area if it closes SBPP. We urge the Board to listen closely to the comments in the coalition letter submitted by EHC and to implement those recommendations in rescinding the SBPP's NPDES permit.

Sincerely,

Gabriel Solmer
Legal Director, San Diego Coastkeeper

Laura Hunter
Clean Bay Director, Environmental Health Coalition