

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

RESOLUTION NO. R04-018

**APPROVING THE INITIAL STUDY AND ADOPTING
A MITIGATED NEGATIVE DECLARATION FOR
CONOCOPHILLIPS COMPANY
(76 STATION 6907)
(OZONE INJECTION FOR GROUNDWATER CLEANUP)
(FILE NO. R-11066)**

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds that:

1. The ConocoPhillips Company (hereinafter Discharger) owns and operates a gasoline service station commonly known as 76 Station No. 6907 (Station) located at 11025 East Washington Boulevard, Whittier, California. The Station is located at the intersection of Norwalk Boulevard and Washington Boulevard at 118°04'16" latitude and 33°58'07" longitude. The Station has been in operation since 1983. The surrounding land uses are a mixture of commercial and residential.
2. On March 1, 2004, the Discharger filed a Report of Waste Discharge for injecting gaseous ozone into the shallow aquifer to remediate the contaminated groundwater at the site.
3. The Station maintains one 10,000-gallon diesel and two 12,000-gallon gasoline underground storage tanks (USTs) with associated dispensers and product. During a leak detection investigation in September 1993, eight hand-auger borings (HA-1 through HA-8) were drilled in the vicinity of the product lines and dispenser islands, and eight hollow-stem auger borings (B-1 through B-8) were drilled in the vicinity of the gasoline and diesel USTs. Three of the borings were converted to groundwater monitoring wells (MW-1 through MW-3). Total petroleum hydrocarbons as gasoline (TPHg) concentrations in soil samples collected from the site indicated a maximum concentration of 8,400 milligrams per kilogram (mg/Kg) and benzene concentration indicated 32 mg/Kg of benzene.
4. Since February 1998, additional assessment activities, including construction of monitoring wells (MW-4 through MW-7, MW-9 through MW-14, MW-1D through MW-6D, MW-8D, and MW-10D), were conducted at the site. The maximum hydrocarbon concentrations detected in soil samples were 35,300 mg/Kg of TPHg, 16,000 mg/Kg total petroleum hydrocarbons as diesel (TPHd), 47 mg/Kg of benzene, and 76 mg/Kg of methyl tertiary butyl ether (MTBE).
5. Groundwater samples collected from September 28, 1993 to February 26, 2004 indicated that the maximum hydrocarbon concentrations were 140,000 micrograms per liter (µg/L) of TPHg (MW-9), 17,000 µg/L of benzene (MW-9), 31,000 µg/L of toluene (MW-9), 4,000

September 10, 2004

µg/L of ethyl-benzene (MW-9), 27,000 µg/L of xylenes (MW-9), 70,000 µg/L of MTBE (MW-12), 52,000 µg/L of tertiary butyl alcohol (TBA) (MW-12).

6. The site is located approximately 0.5 miles east of the San Gabriel River at an elevation of approximately 160 feet above mean sea level and within the San Gabriel River flood plain of the Montebello Forebay Area.
7. Two distinct soil types (low-permeable and high-permeable) are present within the water bearing sediments beneath the site. Generally low-permeable soils are present in the horizon from approximately 10 to 40 feet below ground (fbg) and high-permeable soils are present in the horizon from approximately 40 to 62.5 fbg. The depth to the groundwater ranges from 21 to 44 fbg. The groundwater gradient is directed toward the west-southwest.
8. In October 2002, vapor extraction tests were conducted using vapor wells VW-1 through VW-4 and the shallow onsite monitoring wells. The test results were used to assess the potential remedial alternatives for the site and to develop a remedial action plan (RAP). The Discharger submitted to the Regional Board a RAP dated January 10, 2003. In the RAP the Discharger proposed to use C-Sparge™ technology for remediation of dissolved-phase fuel constituents in groundwater present in the deep groundwater and soil vapor extraction (SVE) to remediate hydrocarbons in soil and shallow groundwater zone. Ten C-Sparge™ injection wells (CS-1 through CS-10) were proposed to remediate hydrocarbon-impacted groundwater in the deeper groundwater zone at the site. The RAP was approved by the Regional Board in a letter dated April 28, 2003.
9. The Discharger proposes to install and operate a C-Sparge™ system to remediate hydrocarbon-impacted groundwater in the deep groundwater zone at the site. The C-Sparge™ technology combines low-flow [3 to 5 cubic feet per minute (cfm)] air sparging with ozonation to oxidize petroleum hydrocarbons into benign byproducts, carbon dioxide and water. Ozone is generated onsite using a control panel with a built-in compressor and ozone generator. Using perforated sparge points, microbubbles [10 to 50 micrometer (µm)] of encapsulated ozone are introduced below the water table, where the oxidation reactions take place. Ten C-Sparge™ injection wells will be installed onsite within the dissolved-phase plume in the deep groundwater zone. The C-Sparge™ injection wells will be located at approximately 55 feet below ground (fbg) and will be screened from approximately 52.5 to 55 fbg. During sparging, no groundwater or vapors will be extracted. Sparging will be performed on a cycled basis.
10. Ozone will chemically react with hydrocarbons in the immediate vicinity of each injection point to form intermediate by-products of various smaller chain hydrocarbons and oxygenates. The following table shows the laboratory-isolated breakdown by-products that could be produced during the ozone oxidation process with the hydrocarbons:

Constituent	Breakdown Products
TPH	acetate, butyrate, formate, propionate
BTEX	Carboxylic acids
MTBE	TBA (tertiary butyl alcohol), TBF (tertiary butyl formate), formate, oxygen,

	hydrogen peroxide
ETBE	TBA, TBF, acetate, oxygen, hydrogen peroxide
TBA	Formaldehyde, acetate, carbon dioxide, water

Finally, the residual oxygen formed from the initial ozone reduction reaction encourages bioremediation which consumes the listed by-products and converts them to carbon dioxide and water, thereby completing process.

11. On June 13, 1994, the Regional Board adopted a revised *Water Quality Control Plan for Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) which was amended on January 27, 1997 by Regional Board Resolution No. 97-02. The Basin Plan (i) designates beneficial uses for surface waters and groundwater, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State anti-degradation policy (*Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Water Resources Control Board (State Board) Resolution No. 68-16, October 28, 1968), and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates by reference applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. The Regional Board prepared the 1994 update of the Basin Plan to be consistent with previously adopted State and Regional Board plans and policies. This project implements the plans, policies and provisions of the Regional Board's Basin Plan.
12. The Basin Plan designates beneficial uses and water quality objectives for groundwater within the Central Basin as follows:

Existing: municipal and domestic supply; industrial service supply; industrial process supply, and agricultural supply.
13. The requirements contained in this Order are based on the *Basin Plan*, and, as they are met, will be in conformance with the goals of the aforementioned water quality control plans and will protect and maintain existing beneficial uses of the groundwater.
14. The permitted discharge is consistent with the anti-degradation provisions of State Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized temporary exceedance of background concentrations of dissolved oxygen, dissolved ferrous iron, total dissolved solids, sulfate, chloride, and boron. However, any parameter change resulting from the discharge:
 - a. will be consistent with maximum benefit to the people of the State,
 - b. will not unreasonably affect present and anticipated beneficial uses of such waters, and
 - c. will not result in water quality less than that prescribed in the Water Quality Control Plan for groundwater within the Central Basin of the Los Angeles Coastal Plain.

15. This Regional Board has assumed lead-agency role for this project under the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 et seq.) and has conducted an Initial Study in accordance with section 15063 of the "State CEQA Guidelines" at California Code of Regulations, title 14, section 15000 et seq. Based upon the Initial Study, Regional Board staff prepared a Mitigated Negative Declaration that the project, as mitigated, will not have a significant adverse effect on the environment.
16. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge and to the tentative requirements.
17. Copies of the Initial Study, the proposed Mitigated Negative Declaration, and Tentative Waste Discharge Requirements were transmitted to all agencies and persons known to be interested in the matter.
18. All comments received have been addressed by Regional Board staff. The Regional Board considered all testimony and evidence at a public hearing held on November 4, 2004, and good cause was found to approve the Initial Study and adopt a Mitigated Negative Declaration.

THEREFORE BE IT RESOLVED BY THE REGIONAL BOARD THAT:

1. The Regional Board hereby approves the Environmental Checklist and adopts the Mitigated Negative Declaration for the ConocoPhillips Company, 76 Station No. 6907, Whittier, project known as Injection of Gaseous Ozone for the Remediation of Groundwater.
2. A copy of this Resolution shall be forwarded to the State Water Resources Control Board.
3. A copy of this Resolution shall be forwarded to all interested parties.
4. The discharge of ozone into the shallow aquifer shall conform to all the requirements, conditions, and provisions set forth in A. "*Discharge Specifications*," B. "*Discharge Prohibitions*," and C. "*Provisions*" of ORDER NO. R4-2004-0179.

CERTIFICATION

I, Jonathan Bishop, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region on December 13, 2004.

JONATHAN BISHOP
Executive Officer

December 13, 2004
Date