

California Regional Water Quality Control Board
Santa Ana Region

Cleanup and Abatement Order No. R8-2011-026

For

The Boeing Company
Huntington Beach Facility
5301 Bolsa Avenue
City of Huntington Beach

The California Regional Water Quality Control Board, Santa Ana Region, (hereinafter "Regional Board"), finds that:

1. Douglas Aircraft Company, McDonnell Douglas Corporation and their successor in interest, The Boeing Company (hereinafter collectively "Boeing"), have operated a facility in Huntington Beach, California ("the Site") since 1963.
2. The Site consists of approximately 150 acres located at 5301 Bolsa Avenue, Huntington Beach, Orange County. The location of the property is shown on Attachment "A", which is made part of this order. It is generally bounded by Rancho Road and Astronautics Drive to the north, Bolsa Avenue to the south, Delta Way and Astronautics Drive to the east, and Bolsa Chica Street to the west.
3. The legal description of the subject property is shown on the parcel map, Attachment "B", which is made part of this order. The site is located in the SW $\frac{1}{4}$ portion of Section 9, Township 5S, Range 11W.
4. Prior to 1963, the property was undeveloped agricultural land.
5. In 1963, Douglas Aircraft Company acquired the property and operated the site as an aeronautical/aerospace manufacturing facility.
6. In 1967, Douglas Aircraft Company merged with McDonnell Aircraft Company to create McDonnell Douglas Corporation. Boeing acquired the Huntington Beach facility in 1997 when it merged with McDonnell Douglas Corporation.
7. Boeing has been conducting environmental investigation and remediation activities at the Site since 1986. These activities have included, but are not limited to, the removal of 19 underground storage tanks ("USTs") from 9 different locations, soil and groundwater sampling and monitoring events, and operation of groundwater remediation systems.
8. Environmental investigations conducted at the Site have assessed groundwater conditions from the water table, which is approximately 10 to 20 feet below land surface, to approximately 280 feet below land surface. The uppermost two regional groundwater aquifers, the Alpha and Beta aquifers, were identified at

depths between approximately 120 to 180 feet and 200 to 280 feet below land surface, respectively. During these investigations, trichloroethylene ("TCE") was the volatile organic compound ("VOC") detected most often above the drinking water maximum contaminant level ("MCL"). TCE has been detected at concentrations exceeding the drinking water MCL from the shallow groundwater near the water table to the Alpha aquifer, but has not been detected exceeding the drinking water MCL in the Beta aquifer. Groundwater remediation activities conducted in the past, and planned for the future, extend from the shallow groundwater down to and including the Alpha aquifer. The VOC 1,1-dichloroethene ("1,1-DCE") has been detected in the Beta aquifer at concentrations slightly exceeding the drinking water MCL and may be related to non-Boeing source(s) upgradient of the Site.

9. Boeing initiated source area groundwater remediation near Building 41 in 1991. The goal was to pump and treat volatile organic compounds, including TCE, acetone, methylene chloride, 1,1,1-trichloroethane ("1,1,1-TCA") and Freon 113. The system was shut down in 2003 when 1,4-dioxane was identified in the extracted groundwater.
10. Results of additional groundwater assessment indicated that groundwater downgradient of the Building 41 source area contained VOCs, including TCE, 1,1-DCE, methylene chloride, vinyl chloride, and Freon 113 exceeding the respective drinking water MCLs. In addition, there were two localized groundwater impacts identified: one in the vicinity of Building 45; and the other near Building 49. The shallow groundwater in the vicinity of Building 45 contained VOCs, principally TCE, with tetrachloroethene ("PCE"), cis-1,2-dichloroethene ("cis-1,2-DCE") and vinyl chloride, exceeding the respective drinking water MCLs. The shallow groundwater near Building 49 contained VOCs, principally TCE, with vinyl chloride, 1,1,2-trichloroethane ("1,1,2-TCA"), 1,1-DCE, 1,2-dichloroethane ("1,2-DCA"), and cis-1,2-DCE exceeding the respective drinking water MCLs. The shallow groundwater in the vicinity of Buildings 41 and 49 also contained 1,4-dioxane at concentrations exceeding the California Department of Public Health Notification Level.
11. In April 2006, an Interim Remedial Measure work plan was prepared for Building 41 groundwater. The work plan proposed to install groundwater extraction wells at the downgradient portion of the Boeing property to prevent off-site migration of volatile organic compounds associated with Building 41, using groundwater pump and treat methods. In a letter dated June 14, 2006, the Regional Board staff concurred with the Interim Remedial Measure work plan. The downgradient Building 41 groundwater extraction and treatment system started operation in January 2007.
12. In August 2006 and February 2007, an Interim In-Situ Chemical Oxidation ("ISCO") work plan and Supplemental ISCO work plan, respectively, were

prepared for Building 41 and Building 45 to reduce concentrations of VOCs in the shallow groundwater at the Building 41 and Building 45 VOC source areas. In a letter dated June 21, 2007, the Regional Board staff concurred with the work plans. Source area groundwater remediation using ISCO was conducted in the Building 41 and Building 45 vicinity from August 2007 through October 2007. Groundwater was then monitored and sampled semiannually through 2009 to monitor the effects of the ISCO treatment program.

13. In January 2009, an Interim Remedial Measure work plan was prepared for Building 41 groundwater in response to the findings of VOC-affected groundwater in the Alpha aquifer near the southwest boundary of the site and that the ISCO treatment program did not achieve anticipated reductions in the shallow groundwater. The work plan proposed to install groundwater extraction wells in the Alpha aquifer to recover VOCs from the Alpha aquifer and in the 60-foot sand unit to further reduce VOC concentrations in the shallow groundwater near the Building 41 source area. The wells were to be connected to the existing downgradient Building 41 groundwater pump and treat system. In a letter dated February 11, 2009, the Regional Board staff concurred with the work plan. The expanded Building 41 groundwater pump and treat system started operation in December 2009.
14. In January 2010, an Interim Remedial Measure work plan was prepared for shallow groundwater at the Building 41 source area to expand the existing pump and treat system to hydraulically control and treat shallow source area groundwater in the 45-foot sand at the Building 41 source area. In a letter dated March 26, 2010, the Regional Board staff concurred with the work plan. The design and construction of this groundwater remediation system is currently ongoing.
15. In May 2010, an Interim Remedial Measure work plan was prepared for shallow groundwater at the Building 45 and Building 49 source areas to expand the pump and treat system to hydraulically control and treat shallow source area groundwater at Building 45 and Building 49. In a letter dated June 15, 2010, the Regional Board staff concurred with the work plan. The design and construction of the groundwater remediation system is currently ongoing.
16. The pump and treat system downgradient of the Building 41 source area consists of liquid phase granular activated carbon for VOC treatment. Since it began operation in 2007 to limit off-site migration of the VOCs, it has been expanded to not only remediate shallow groundwater, but to also recover VOCs from the underlying Alpha Aquifer.
17. Expansion of the existing pump and treat system is required to continue extracting and treating shallow groundwater from the Building 41, 45 and 49 source areas. The system expansion includes expansion of the existing groundwater extraction

and treatment system to hydraulically control VOCs at Building 41 and a separate groundwater extraction and treatment system to hydraulically control VOCs at the Building 45 and Building 49 source areas, and to treat 1,4-dioxane at the Building 41 and 49 source areas. These systems are intended to mitigate or reverse the downward vertical migration of these compounds. Additionally, the treatment equipment shall be modified as necessary to treat these compounds in extracted groundwater from these source areas.

18. The subject site overlies the Orange County Groundwater Management Zone, the beneficial uses of which include:
 - a. Municipal and domestic supply
 - b. Agricultural supply
 - c. Industrial service supply, and
 - d. Industrial process supply.
19. Past operations at the site have caused or permitted wastes to be discharged into waters of the State and is creating, or threatening to create, a condition or nuisance or pollution. Therefore, pursuant to Water Code Section 13304, it is appropriate to require Boeing to cleanup such waste and abate the effects thereof. Boeing has agreed to take responsibility for the necessary remedial actions at the property.
20. Water Code Section 13304 allows the Regional Board to recover reasonable expenses from the responsible parties for overseeing cleanup of illegal discharges, contaminated properties, and other unregulated releases adversely affecting the state's waters. It is the Regional Board's intent to recover such costs for regulatory oversight work conducted in accordance with this order.
21. This action is being taken by a regulatory agency to enforce a water quality law. Such action is exempt from the provisions of the California Environmental Quality Act (Public Resources Codes, Section 21100 et seq.) in accordance with Section 15321, Chapter 3, Title 14, of the California Administrative Code.

IT IS HEREBY ORDERED THAT, pursuant to Sections 13267 and 13304, Division 7, of the California Water Code, Boeing shall submit technical and monitoring reports and cleanup the waste or abate the effects of the waste that has been, or probably will be, discharged into waters of the state, in accordance with the following tasks:

1. Continue to operate, maintain, and monitor the existing Building 41 groundwater remediation system in accordance with the work plans submitted in April 2006 and January 2009. Submit semi-annual groundwater monitoring reports in accordance with the following schedule:

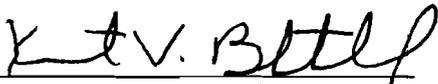
<u>Groundwater Monitoring Period</u>	<u>Report Due Date</u>
January to June	August 31
July to December	February 28

This schedule may be modified, with the approval of the Executive Officer of the Regional Board (Executive Officer).

2. Implement the Building 41 groundwater source area work plan submitted in January 2010. Submit a technical report within 60 days of system start-up that includes the results of extraction well installation and initial start-up of the remediation system.
3. Implement the Building 45 and Building 49 groundwater source area work plan submitted in May 2010. Submit a technical report within 60 days of system start-up that includes the results of extraction well installation and initial start-up of the remediation systems.
4. Modify the groundwater treatment equipment as necessary to treat the compounds in extracted groundwater to levels appropriate for approved discharge scenarios.
5. Conduct any additional groundwater assessment, if necessary, to further define the lateral and vertical extent of soil and groundwater impacted by discharges at the site, as directed by the Executive Officer.
6. Implement any necessary actions to abate the effects of discharges of VOCs to the soil and groundwater, and submit and implement any work plans necessary for the expansion of or improvement to the groundwater remediation systems, as directed by the Executive Officer.
7. Boeing shall reimburse the Regional Board for reasonable costs incurred in supervising cleanup or abatement activities, or taking other remedial action, in accordance with Water Code Section 13304.

If, in the opinion of the Executive Officer, this order is not complied with in a reasonable and timely manner, this matter will be referred to the Board for the imposition of civil liability or referral to the Attorney General for imposition of judicial liability, as provided by law.

3/14/11
Date


Kurt V. Berchtold
Executive Officer