CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 95-112

AMENDMENT TO FINAL SITE CLEANUP REQUIREMENTS ORDER NO. 94 - 064

UNITED TECHNOLOGIES CORPORATION
CHEMICAL SYSTEMS DIVISION - COYOTE CENTER

600 METCALF ROAD
SANTA CLARA COUNTY

OPERABLE UNIT 1

The California Regional Water Quality Control Board, San Francisco bay Region (hereinafter called the Board) finds that:

1. **Site History:** United Technologies Corporation, Chemical Systems Division (UTC), owns and operates the Chemical Systems Division in Santa Clara County. The site is located on a 5200 acre parcel in a remote area in an unincorporated area of Santa Clara County approximately five miles south of San Jose and four miles east of U.S. Highway 101. UTC began on-site operation in 1959 and has used the site for developing, manufacturing and testing space and missile propulsion systems. These activities have resulted in soil and groundwater contamination at the site. The majority of contaminants identified are volatile organic compounds (VOCs). Polychlorinated biphenyls (PCBs) have also been identified in some areas, notably at station 535 in Mixer Valley.

2. **Regulatory Status:** The Board adopted Order No. 94-064 (Final Site Cleanup Requirements) on May 18, 1994. This Order contains final cleanup standards for soil and groundwater in operable unit 1, which consists of the two mostly developed valleys within the site, namely Shingle Valley and Mixer Valley.

3. **PCB Cleanup Standards:** The cleanup standards for PCBs in soil were established in the Order as 0.3 ppm, with provisions allowing the Executive Officer to modify this standard for soils below 3 feet, if the discharger demonstrates that higher levels can be left in place without degrading the quality of the water. This standard was modified by the Executive Officer to 10 ppm for soils deeper than 3 feet in June of 1994.

4. **Requested Modifications:**

    a. **PCB Cleanup Standards:** Following adoption of the Order, UTC realized that the PCB site investigation to date had been conducted assuming that the cleanup level for PCBs in soil, including the top 3 feet, is 10 ppm. In a letter dated

January 4, 1995, UTC proposed that the soil cleanup standard for PCBs for the top 3 feet of soil be modified to 3 ppm instead of 0.3 ppm.In a letter dated March 14, 1995, UTC demonstrated that cleaning up the top 3 feet of soils to 3 ppm instead of 0.3 ppm corresponds to the 10^{-5} excess cancer risk (1 in a 100,000), which is within the acceptable range of 10^{-6} (1 in 1,000,000) to 10^{-4} (1 in 10,000) established in the Order. The post-cleanup total risk for PCBs and VOCs at station 535 was calculated assuming industrial use, which is a reasonable assumption given the location, size and the function of the facility, however, the risk assuming residential use was also calculated and was determined to be between 10^{-6} and 10^{-4} excess cancer risk. Mixer Creek which is located approximately 1000 feet downstream of the PCB station has poor habitat value for aquatic and riparian habitat. Some of the factors contributing to the poor aquatic habitat in the creek are lack of water, low habitat diversity and the poor quality of substrate in the creek. Soils data in a swale immediately downgradient of the station indicates minimal PCB movement in sediments along the swale. The reason for that is most likely because the swale is discontinuous and dry for most of the year. Since the PCBs in soil do not appear to be moving far, and the nearest body of water is Mixer Creek which is also dry for the most parts and does not have significant aquatic life, a PCB cleanup standard of 3 ppm is considered to be protective of ecological resources. UTC has estimated the cost of cleaning up to 3 ppm to be approximately $1,300,000, and cleaning up to 0.3 ppm instead of 3 ppm has been estimated to cost an additional $267,235 to $1,295,228.

UTC addressed the issue of PCB mobilization by VOCs, in a letter dated June 7, 1994. In summary, existing VOC concentrations in soil and groundwater are too low to result in significant mobilization. Since post cleanup levels are considerably lower than existing concentrations, no cosolvency is expected after cleanup levels have been achieved.

b. **Other:** In another letter dated March 21, 1995, UTC also requested clarifications in Finding No.6 with respect to reporting of the result of site investigation, and modifications to Finding 15a to make it consistent with the language in the Specifications.

6. **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resource Agency Guidelines.

7. **Notification:** The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to amend site cleanup

requirements for the discharge, and has provided them with an opportunity to submit their written comments.

8. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this order.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code that Order No. 94-064 is amended as follows:

A. Finding No. 6 (first paragraph only) is modified as follows:

History of Site Investigations. The bulk of the investigation to date is included in the following reports: Source Identification and Characterization Reports Part I Revised and Part II dated May 1991 and June 1990, respectively, RCRA Facility Investigation/Corrective Measure Study dated June 1991, and its addendum dated June 1993, and Human and Environmental Health Evaluation, Parts I & II dated November and December 1992.

B. Finding No. 15a is modified as follows:

Continued extraction and treatment of the shallow groundwater in order to prevent vertical or lateral migration of contaminants, to prevent seepage of contaminated groundwater into creeks at concentrations exceeding MCLs, and to restore groundwater quality.

C. Finding No. 16 is modified as follows:

Cleanup Standards. The cleanup standards must be protective of human health and the environment. Anderson Reservoir, at its high water mark, is within one-half mile of the southern boundary of the site and is used for recreation and recharge of the groundwater basin. It is also used as a holding area for imported surface water from San Felipe Reservoir. The groundwater basin is a major source of drinking water in the Santa Clara Valley. Due to the potential of contaminated groundwater seeping into the creeks and migrating offsite toward Anderson Reservoir, it is critical that: 1) there is no contaminated groundwater seepage into the creeks surface and subsurface flow, 2) alluvial groundwater is treated up to standards which protect the human health and the environment, 3) there is no further migration of alluvial groundwater exceeding groundwater cleanup standards, to deeper aquifers, and 4) contaminants are prevented from migrating beyond the property boundary.

The groundwater cleanup standards for the site are based on adopted or proposed U.S. Environmental Protection Agency Maximum Contaminant Levels (MCLs) and proposed

or adopted California Environmental Protection Agency MCLs. The more stringent standard will be utilized. At this time it appears that cleanup of groundwater to below the MCLs may be technically impractical due to the difficulties in restoring aquifers with respect to the physical and chemical nature of the contaminants. For this reason, MCLs are acceptable to meet the intent of State Board Resolution 68-16. For those chemicals that do not have MCLs, standards were set so that the individual risk associated with the cleanup standards would be within acceptable levels.

Volatile organic compounds and other contaminants are present in the soil at several locations at the site. Two migration pathways exist: leaching from the soil to the underlying groundwater and volatilization from the soil to the atmosphere. In order for soil cleanup levels to be protective of groundwater, the maximum concentration of chemical allowable in the soils of the vadose zone must be such that soil leachate entering the underlying aquifer does not degrade the groundwater beyond proposed groundwater quality standards. The chemicals of concern in soil are the same as those in groundwater, predominantly VOCs. The presence of VOCs at high concentrations would present a continued threat to water quality. In the past, several adopted Regional Water Board Orders included cleanup standards of 1 mg/kg (ppm) total VOCs for vadose zone soils. In addition, the Basin Plan's groundwater amendment, which is pending approval by the State Water Board, recommends a cleanup standard of 1 mg/kg (ppm) for total VOCs. This standard applies to vadose zone soils only, and is based on the modeling results at a Superfund site in the Region, the existence of similar standards in the state of New Jersey, and the professional judgement of Board staff. As an alternative to this cleanup level, UTC has proposed soil cleanup standards of 1 ppm and 5 ppm total VOCs, depending on the toxicity and mobility of the VOCs at each station. Higher toxicity VOCs are defined as VOCs that have MCL/alternate concentration limit (ACL) of 5 μg/l or less, or are classified as an "A" or a "B" carcinogen (weight of evidence). They include, but are not limited to, Trichloroethylene (TCE), Vinyl Chloride, 1,1-dichloroethane (DCA), and Perchloroethylene (PCE). Lower toxicity VOCs are defined as VOCs that have MCL/ACLs higher than 5 μg/l, or are classified as a "C" or a "D" carcinogen (weight of evidence). They include, but are not limited to, Acetone, 2-Butanone (MEK), cis,1-2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), Freon 11, Freon 113, and 1,1,1-trichloroethane (TCA).

PCB contamination exists at station 0535 and is commingled with the VOC plume and a non-PCB based heat transfer fluid (Therminol 55) in that area. Concentrations of VOCs and Therminol 55 in groundwater and in soil after cleanup levels have been achieved at station 0535, are believed to be too low to increase the mobility of the PCBs. Although current concentrations of VOCs and Therminol 55 in soil and groundwater are also believed to be too low to increase the mobility of PCBs, however, it is important that cleanup levels for VOCs, the heating oil and PCBs in soil and groundwater are achieved expeditiously to prevent any further migration of the PCBs and VOCs in groundwater.

PCB concentration in groundwater will be reduced to 0.5 ppb which is the MCL for PCBs. In soil, the discharger's risk assessment report proposes a cleanup goal range of 0.3 mg/kg to 30 mg/kg of total PCBs. This range is based on potential direct soil exposure at station 0535 assuming this area is once again active, with no exposure restriction for workers, and corresponds to 10^{-6} to 10^{-4} increased cancer risk with lifetime exposure for an adult worker. Federal Toxic Substance Control Act (TSCA) regulations establish 10 mg/kg of PCBs for unrestricted access areas and 25 mg/kg of PCBs for restricted access areas. PCB concentration of 3 mg/kg in soil, corresponds to a 10^{-5} increased cancer risk with lifetime exposure for an adult worker, and is established as the PCB cleanup goal for soil to protect public health and prevent further degradation of water quality. The risk associated with VOCs left in place is negligible compared to the risk associated with PCBs. As a result, the risk of PCBs and VOCs combined remains essentially the same (i.e. 10^{-5}). However, if the discharger demonstrates that higher concentrations of PCBs can be left in soil without leaching into groundwater, higher cleanup levels of up to 10 mg/kg established by TSCA will be applied to soils deeper than 3 feet below surface after grading.

Diesel fuel contamination exists at station 0710. Cleanup levels for diesel in soil and groundwater are based on best professional judgement. Due to proximity of the plume to the creek and potential impacts to aquatic life in the creek, a groundwater cleanup standard of 100 ppb, based on EPA's Suggested No-Adverse Response Levels (SNARL), is established. A soil cleanup standard of 500 mg/kg based on past actions by the Board is established. If the discharger demonstrates through site specific field investigation that higher levels of diesel can be left in place, without threatening the quality of waters of the State, these standards may be modified.

D. Table 5 is modified as follows:

TABLE 5
SOIL CLEANUP STANDARDS mg/kg

Chemical	Cleanup Standards	Weight of Evidence[1]
Total class C or D VOCs	5	C or D
Total class A, B1, B2 VOCs	1	A,B1 or B2
PCBs	3*	B2
TPH diesel	500**	-

* 3 mg/kg applies to the top 3 feet of soil after grading. PCB cleanup level for soils deeper than 3 feet below ground surface after grading is 10 mg/kg.

** Based on best professional judgement based on site conditions and prior Board actions. This standard may be modified by the Board if the discharger demonstrates through site

specific field investigation, that higher levels of diesel left in soil will not threaten the quality of waters of the State.

Notes:

[1] Weight of Evidence, EPA's guidelines for carcinogen risk characterization.

Group A - Human Carcinogen
Group B - Probable Human Carcinogen
Group C - Possible Human Carcinogen
Group D - Not Classified as to Human Carcinogenicity
Group E - Evidence of Noncarcinoginicity for Humans

E. Second paragraph of Provision 10 is modified as follows:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for false information including the possibility of fine and imprisonment for knowing violations.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 24, 1995.

Steven R. Ritchie
Executive Officer