CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. 01-136

WASTE DISCHARGE REQUIREMENTS
FOR
NORTHROP GRUMMAN CORPORATION - FORMER NEWBURY PARK FACILITY
(MOLASSES SOLUTION INJECTION PILOT TEST)
(FILE NO. 94-18)

The California Regional Water Quality Control Board, Los Angeles Region, (hereafter Regional Board) finds that:

1. Northrop Grumman Corporation (hereafter Discharger) owns the former Newbury Park Facility (Lattitude 118^0 55'41'', Longitude 34 ^{0} 12'01'') (Figure 1). The Discharger has filed a Report of Waste Discharge for a pilot test to use a molasses solution to remediate groundwater at this site, and has applied for waste discharge requirements.

2. This site, encompassing approximately 100 acres, is located at 1515 Rancho Conejo Boulevard, Newbury Park, California (Figures 1 and 2), and was formerly used by the Discharger for manufacturing aircraft subassemblies. The manufacturing plant was built in the 1960s in the southern 48 acres of the site. The remaining 52 acres are undeveloped. A few buildings remain on the site, and the site is currently undergoing reconstruction under the new ownership of the property.

3. In early 1980, a Phase II environmental site assessment was conducted at the site. Analytical results indicated that groundwater beneath the site is impacted with various volatile organic compounds (VOCs). Since 1985, the Discharger has installed a total of 73 groundwater monitoring wells (70 monitoring wells and 3 extraction wells) on site. Groundwater analytical data indicate, in addition to trichloroethene (TCE), the presence of 1,1- dichloroethene (1,1-DCE), 1,1,1-trichloroethene (1,1,1 TCA), 1,1-dichloroethane (1,1-DCA), and tetrachloroethene (PCE). Groundwater VOC concentrations range from non-detect up to 2,390 micrograms per liter (ug/l) TCE, up to 200 ug/l 1,1 –DCA, up to 62 ug/l 1,1,1-TCA, up to 36 ug/l PCE, and (non detect) 1,1 –DCE.

4. Since 1994, the Discharger has operated a soil vapor extraction system (VES) with 135 vapor extraction wells in the southern portion of the site at the former aboveground tank storage area. Approximately, 41,000 pounds of VOCs were removed from the soil. On January 22, 1997, Regional Board staff issued a "no further action" letter for the soil at the site.

5. The Discharger has operated an interim groundwater extraction and a conventional Granular Activated Carbon (GAC) treatment system since 1992. The system included three groundwater extraction wells, EW-1, EW-2, and EW-3. Treated groundwater was discharged in accordance with NPDES Permit (Order No. 91-103) requirements.

6. Recent groundwater monitoring and sampling performed by the Discharger has prompted re-evaluation of additional groundwater control to prevent off-site migration of VOCs dissolved in the groundwater. A new groundwater treatment system was designed and approved by Regional Board staff, however, the system has no capability of mitigating the levels of total dissolved solids (TDS) in the effluent, in excess of the NPDES permit limits. Therefore, the Dicharger is proposing an in-situ remediation method using a molasses solution to cleanup the VOCs, and mitigating the levels of TDS in the groundwater.

7. The geologic formation underlying the site is comprised of basaltic volcanic rock (Conejo Volcanics), of which the upper portion is comprised of a saturated, coarse-grained sand and gravel unit that underlies the finer grained alluvium. Groundwater appears to exist primarily in fractures, seams, or vesicles, under confined conditions. The depth to groundwater is from between 150 to 200 feet below ground surface.

8. The nearest active water supply wells (Figure 7) to the site are located: 1) approximately less than one half mile to the southwest, upgradient at Talley Corporation, 2) approximately one mile to the south, upgradient on Mitchell Road (these two wells are used for landscape irrigation), 3) approximately 2 and ½ miles to the north, downgradient in the Santa Rosa Valley, and 4) the Newbury Academy well, located approximately ¾ miles to the southwest and upgradient, (these two wells are used for domestic water supply and for crop irrigation). No contamination from these wells has been reported.

9. The Discharger proposes to test an innovative approach for providing expedited cleanup of the contaminated groundwater using a molasses solution. The intent is to treat the high concentrations of chlorinated VOCs. In order to determine if molasses can be used to provide full-scale remediation of the plume, the Discharger proposes to conduct a six-month pilot test. If the pilot test indicates that the molasses solution can be used successfully to treat the VOCs in the groundwater, the Discharger may propose to use this technology to treat other areas containing impacted groundwater. Based upon other case studies, the Discharger anticipates the results of the pilot test will demonstrate the effectiveness of the technology for subsurface treatment of VOCs at the site. A full-scale remediation project is planned for implementation following successful completion of the pilot study. By comparison, the average groundwater extraction system is estimated to require an additional 5 to 10 years to remediate groundwater to concentrations below detection limits.

10. The six-month in-situ reactive zone (IRZ) pilot test will involve the injection of a molasses solution into the subsurface to create an anaerobic and reducing condition in groundwater in an effort to facilitate reductive dechlorination of chlorinated volatile organic compounds. Hydrolysis and fermentation of molasses ultimately result in the production of carbon dioxide and water. In addition, molasses injection will likely reduce TDS content in the groundwater since nitrates and sulfates will also be reduced. The reductive dechlorination breakdown pathways and intermediates for VOCs commonly found as environmental contaminants are presented in Figures 3 and 4.

11. The Discharger is proposing to conduct the IRZ pilot test in two locations at the site: the Paraplast Area (30 feet by 24 feet), and North Area (40 feet by 300 feet), respectively Figures 5 and 6. The IRZ system will consist of one IRZ injection well and four groundwater-monitoring wells located in each pilot test area. One monitoring well will be positioned upgradient of the injection well for background measurement purposes, and three monitoring wells will be positioned downgradient of the injection well. Injection frequencies will occur weekly for the first four weeks; biweekly for two months; then monthly for the remaining three months, for a total of eleven injection events per injection well.

12. The Discharger has submitted a Monitoring Plan (Plan). The plan details the procedures for evaluating the injection volume and concentrations, and the frequency of injection will be adjusted based on the result of field monitoring. Groundwater conditions will be monitored during the IRZ system operation to determine the efficiency of the molasses injection.

13. The Discharger proposes to provide control measures for the pilot test areas for hydraulic containment of groundwater and any by-products or molasses are observed to be migrating off-site. Monitoring will consist of gauging and sampling the wells for the indicated analytes, as submitted in the Plan. In addition, water gauging will be utilized to monitor water elevations and gradient in order to contain the IRZ system and avoid adding too much fluid, such that the site gradient is adversely affected.

14. Groundwater flow rate is 30 feet per month to the north-northwest. The Discharger proposes to inject up to 100 gallons of 10 percent molasses and water solution, total of 1,100 gallons per injection well using pump and down-well hose to a depth from 50 to 146 feet below the ground surface. Monitoring well MW-7 is upgradient, and IRZ-M1, IRZ-M2, and IRZ-M3 are the downgradient wells in the Paraplast area. In the North area, IRZ-B1 is upgradient, and IRZ-M4, IRZ-M5, and MW-98 are the downgradient wells.

15. Any injection of a molasses solution into the groundwater is a discharge of waste as defined by the California Water Code. However, the discharge of molasses solution is intended to provide more efficient remediation of VOCs polluted groundwater and may significantly reduce the anticipated cleanup time as compared to pump-and-treat technology should it be used to remediate the groundwater contamination.

16. The Regional Board adopted a revised Water Quality Control Plan for the Los Angeles Region on June 13, 1994. The Plan contains beneficial uses and water quality objectives for the Thousand Oaks Area Groundwater Basin. The requirements contained in this Order, as they are met, will be in conformance with the goals of the Plan.

17. The beneficial uses for the Thousand Oaks Area Groundwater Basin are municipal, industrial, process and supply, and agricultural supply.

18. The permitted discharge is consistent with the anti-degradation provisions of State Water Resources Control Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may

result in some localized exceedance of background concentrations of total organic carbon, VOCs, and TDS. However, after the injection of molasses solution, these parameters are not anticipated to exceed the primary or secondary standards. Moreover, 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 water, and
c. Will not result in water quality less than that prescribed in the Water Quality Control Plan for Thousand Oaks Area Groundwater Basin.

19. The Regional Board has assumed lead agency role for this project under the California Environmental Quality Act (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, the Regional Board prepared a Mitigated Negative Declaration that the project, as mitigated, will not have a significant adverse effect on the environment.

20. 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 for a public hearing and an opportunity to submit their written comments and recommendations. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge and to the tentative requirements.

I**T IS HEREBY ORDERED** that Northrop Grumman Corporation (hereafter Discharger), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following:

A. Discharge Limits

1. The Discharger shall not cause the groundwater outside of the pilot test area to exceed background concentrations of chloride and TDS established prior to start of the pilot test.

2. The discharge of the molasses solution into the groundwater shall be only performed during the six-month pilot test period.

3. During this pilot test, the injection volume of molasses solution shall be 50 to 100 gallons into each IRZ injection well per injection event, or a bench-test determined volume, approved by the Executive Officer.

B. Discharge Specifications

1. The Discharger shall provide hydraulic control and complete containment of any by-products of the chemical reduction process, beginning no later than four months after the first injection of molasses solution in the pilot test area or immediately if any by-products or molasses are observed to be migrating off-site.

2. The Discharger shall not cause the by-products of the chemical reduction process to migrate outside of the molasses solution treatment area established by the Discharger and approved by the Executive Officer.

3. The discharge of molasses solution or any by-products into any surface water or surface water drainage course is prohibited.

4. The Discharger shall not cause the groundwater to contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

5. The Discharger shall not cause the groundwater to contain concentrations of chemical constituents, including molasses and its by-products, in amounts that adversely affect municipal, domestic, industrial or agricultural uses as a result of the molasses solution Pilot Study.

C. Provisions:

1. This Order includes the attached "Standard Provisions Applicable to Discharge Requirements." If there is any conflict between provisions stated hereinbefore and the attached "Standard Provisions," those provisions stated hereinbefore prevail.

2. Discharge of wastes to any point other than specifically described in this Order is prohibited and constitutes a violation thereof.

3. In the event of any change in name, ownership, or control of this facility, the Discharger shall notify this Regional Board in writing and shall notify any succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to this Regional Board.

4. In accordance with section 13260 of the Water Code, the Discharger shall file a report of any material change or proposed change in the character, location or volume of discharge.

5. The Discharger shall notify this Regional Board immediately by telephone of any adverse condition resulting from this discharge or from operations producing this waste discharge, such notifications to be affirmed in writing within one week from the date of such occurrence.

6. This Regional Board considers the property operator and owner to have continuing responsibility of correcting any problem that may arise in the future as a result of this discharge.

7. The Discharger shall submit a six-month pilot test Summary Report detailing the results of the pilot test. The report should include an evaluation of the effectiveness of using the molasses solution to supplement the full-scale remediation of VOC-contaminated groundwater at the facility, the impact of any by-products on the receiving groundwater quality, and any other effects the in-situ treatment may have.

8. All work must be performed by or under the direction of a registered civil engineer, registered geologist, or certified engineering geologist. A statement is required in all technical submittals that the registered professional in direct responsible charge actually supervised or personally conducted all the work associated with the project.

9. The use of a molasses solution shall not cause a condition of pollution or nuisance as defined by California Water Code, section 13050.

10. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as specified in the attached Monitoring and Reporting Program No. CI-8328. Violations of any conditions may result in enforcement action.

11. This Order does not exempt the Discharger from compliance with any other laws, regulations, or ordinances which may be applicable. This Order does not legalize the waste treatment facility, and leaves unaffected any further restraints on the facility that may be contained in other statutes or required by other agencies.

12. The Discharger shall cleanup and abate the effects of injecting molasses solution, including extraction of any by-products which adversely affect beneficial uses, and shall provide an alternate water supply source for municipal, domestic or other water use wells that become contaminated in exceedance of water quality objectives as a result of using molasses solution.

13. In accordance with section 13263 of the California Water Code, these requirements are subject to periodic review and revision by this Regional Board.

14. After notice and opportunity for a hearing, this Order may be terminated or modified for cause including, but not limited to:
    a. Violation of any term or condition contained in this Order.
    b. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts.
    c. A change in any condition that requires either a temporary or permanent reduction or elimination of authorized discharge.

D. Expiration Date

This Order expires on September 19, 2002.

The Discharger must file a Report of Waste Discharge in accordance with title 27, California Code of Regulations, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.

I, Dennis A. Dickerson, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on September 19, 2001.

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Dennis a. Dickerson
Executive Officer

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