GM HUGHES ELECTRONICS

Subsidiary of General Motors

May 21, 1991

Director
Toxic Substances Control Division
Department of Health Services
State of California
714/744 "P" Street
P.O. Box 942732
Sacramento, CA 94234-7320

I am the Chief Financial Officer of GM Hughes Electronics Corporation (GMHE), 3044 W. Grand Boulevard, Detroit, Michigan 48202.

This letter is in support of the use of the financial test and corporate guarantee to demonstrate financial responsibility for liability coverage and closure/post-closure care as specified in Division 30, Title 22, California Code of Regulations.

1. The corporation identified above guarantees, through the financial test and corporate guarantee as specified in Division 30, Title 22, California Code of Regulations, liability coverage for sudden accidental occurrences for the following facilities owned or operated by its subsidiaries. The amount of liability coverage covered by this test is shown for each facility:

Identification Number of Facility	Name and Address of Facility	Sudden * Liability Coverage Amount ($ Millions)
CAD 041 162 124	Missile Systems Group 8433 Fallbrook Avenue Canoga Park, CA 91304	$2
CAD 000 633 230	Electro-Optical & Data Systems Group 2000 E. El Segundo Blvd. El Segundo, CA 90245	$2
CAD 063 109 243	Ground Systems Group 1901 W. Malvern Avenue Fullerton, CA 92634	$2
CAD 096 882 147	Microelectronics Systems Division 2601 Campus Drive Irvine, CA 92715	$2
CAD 076 071 737	Connecting Devices Division 17150 Von Karman Avenue Irvine, CA 92714	$2

GM Hughes Electronics
General Motors Building
3044 W. Grand Boulevard
Detroit, Michigan 48202

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CAT 080 012 867	Support Systems Division 1500 Hughes Way Long Beach, CA 90810	$2
CAD 041 156 969	Hughes Research Laboratories 3011 Malibu Canyon Road Malibu, CA 90265	$2
CAD 057 468 944	Microelectronic Circuits Division 500 Superior Avenue Newport Beach, CA 92658-8903	$2
CAT 080 010 853	Radar Systems Group 2000 E. Imperial Highway El Segundo, CA 90245	$2
CAD 060 897 063	Space & Communications Group 1920 E. Imperial Highway El Segundo, CA 90245	$2
CAD 028 260 297	Santa Barbara Research Center 75 Coromar Drive Goleta, CA 93117	$2
CAD 981 385 073	Santa Barbara Research Center 2100 South Blosser Santa Maria, CA 93454	$2
CAD 041 666 819	Electron Dynamics & Microwave Products Division 3100 W. Lomita Blvd. Torrance, CA 90509	$2
CAD 981 440 068	Space & Communications Group 19300 Gramercy Place Torrance, CA 90509	$2
CAD 008 351 827	Hughes Simulation Systems, Inc. 1200 E. San Bernardino Road West Covina, CA 91790	$2

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2. The corporation identified above guarantees, through the financial test and corporate guarantee as specified in Sections 67009 and 67021, Division 30, Title 22, California Code of Regulations, the closure and post-closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure and post-closure care so guaranteed are shown for each facility:

Identification Number	Name and Address	Closure Amount
CAD 041 162 124	Missile Systems Group 8433 Fallbrook Avenue Canoga Park, CA 91304	$567,600
CAD 000 633 230	Electro-Optical & Data Systems Group 2000 E. El Segundo Blvd. El Segundo, CA 90245	118,105
CAD 063 109 243	Ground Systems Group 1901 W. Malvern Avenue Fullerton, CA 92634	392,100
CAD 096 882 147	Microelectronics Systems Division 2601 Campus Drive Irvine, CA 92715	57,734
CAD 076 071 737	Connecting Devices Division 17150 Von Karman Avenue Irvine, CA 92714	185,000
CAT 080 012 867	Support Systems Division 1500 Hughes Way Long Beach, CA 90810	91,400
CAD 041 156 969	Hughes Research Laboratories 3011 Malibu Canyon Road Malibu, CA 90265	228,797
CAD 057 468 944	Microelectronic Circuits Division 500 Superior Avenue Newport Beach, CA 92658-8903	44,500
CAT 080 010 853	Radar Systems Group 2000 E. Imperial Highway El Segundo, CA 90245	180,156
CAD 060 897 063	Space & Communications Group 1920 E. Imperial Highway El Segundo, CA 90245	238,480

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CAD 028 260 297	Santa Barbara Research Center 75 Coromar Drive Goleta, CA 93117	283,422
CAD 981 385 073	Santa Barbara Research Center 2100 South Blosser Santa Maria, CA 93454	253,428
CAD 041 666 819	Electron Dynamics & Microwave Products Division 3100 W. Lomita Blvd. Torrance, CA 90509	214,517
CAD 981 440 068	Space & Communications Group 19300 Gramercy Place Torrance, CA 90509	66,500
CAD 008 351 827	Hughes Simulation Systems, Inc. 1200 E. San Bernardino Road West Covina, CA 91790	51,077

The corporation identified above is not required to file a Form 10-K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this corporation ends on December 31. The figures for the following items marked with an asterisk are derived from this corporation's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1990.

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ALTERNATIVE I

1.	Sum of current closure and post-closure cost estimates	$2,972,816
2.	Amount of annual aggregate liability coverage to be demonstrated	$30.0 Million
3.	Sum of lines 1 and 2	$32,972,816
*4.	Total liabilities	$4,629.2 Million
*5.	Tangible net worth	$4,212.6 Million
*6.	Net worth	$8,098.3 Million
*7.	Current assets	$4,734.3 Million
*8.	Current liabilities	$3,360.4 Million
*9.	Net working capital	$1,373.9 Million
*10.	The sum of net income plus depreciation, depletion, and amortization	$1,227.4 Million
11.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	N/A
12.	Is line 5 at least $10 million?	Yes
13.	Is line 5 at least 6 times line 3?	Yes
14.	Is line 9 at least 6 times line 3?	Yes
15.	Are at least 90% of assets located in the U.S.? If not, complete line 16	Yes
16.	Is line 11 at least 6 times line 3?	N/A

May 21, 1991

*17. Is line 4 divided by line 6 less than 2.0? ..... Yes

*18. Is line 10 divided by line 4 greater than 0.1? .. Yes

*19. Is line 7 divided by line 8 greater than 1.5? ... No

I hereby certify that this letter is worded as specified by the Department of Health Services and is being executed in accordance with the requirements of Article 17, Title 22, California Code of Regulations.

Bruce W. Alexander

Signature

Bruce W. Alexander

Type or Printed Name

Treasurer & Chief Financial Officer

Title

May 21, 1991

Date

Deloitte & Touche

1000 Wilshire Boulevard
Los Angeles, California 90017-2472
Telephone: (213) 688-0800

Facsimile: (213) 688-0100
Telex: 9103214090

GM Hughes Electronics Corporation:

We have audited, in accordance with generally accepted auditing standards, the consolidated financial statements of GM Hughes Electronics Corporation (the "Corporation") (a wholly owned subsidiary of General Motors Corporation) and consolidated subsidiaries for the year ended December 31, 1990, and have issued our report thereon dated February 13, 1991. We have not performed any auditing procedures beyond the date of our report on the financial statements; accordingly, this report is based on our knowledge as of that date and should be read with that understanding.

At your request, we have performed the procedures enumerated below with respect to the accompanying letter from Mr. Bruce W. Alexander, Treasurer of the Corporation, to the Director, Toxic Substances Control Division, Department of Health Services, State of California, dated May 21, 1991. It is understood that this report is solely for filing with the Department of Health Services of the State of California in connection with the Corporation's compliance with Division 30, Title 22, California Code of Regulations and is not to be used for any other purpose. The procedures that we performed are summarized as follows:

1. We recomputed, from the financial statements referred to in the first paragraph, the amounts shown in items 4 through 10 under the caption Alternative I in the letter referred to above.

2. We read Statement of Financial Accounting Standards No. 14 (which requires, among other things, the disclosure of certain information when total assets located in the United States are less than 90% of consolidated total assets) and the notes to the financial statements referred to in the first paragraph and, in light thereof, reviewed the answers to items 11 and 15.

Because the procedures referred to in the preceding paragraph were not sufficient to constitute an audit made in accordance with generally accepted auditing standards, we do not express an opinion on any of the information listed under the caption Alternative I in the aforementioned letter. In performing the procedures referred to above, however, no matters came to our attention that caused us to believe that the amounts in items 4 through 10 or the answers to item 11 or 15 should be adjusted.

Deloitte & Touche

May 21, 1991

GM HUGHES
ELECTRONICS
Subsidiary of
General Motors

May 21, 1991

Director
Toxic Substances Control Division
Department of Health Services
State of California
714/744 "P" Street
P.O. Box 942732
Sacramento, CA 94234-7320

Guarantee made this May 21, 1991, by GM Hughes Electronics Corporation (GMHE), a business corporation organized under the laws of the State of Delaware, herein referred to as guarantor, to the Department of Health Services (DHS), obligee on behalf of our subsidiary' Hughes Aircraft Company of 7200 Hughes Terrace, Los Angeles, California 90045.

RECITALS

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Sections 67009 and 67021, Title 22, California Code of Regulations.

2. Hughes Aircraft Company owns at least 50 percent of the voting stock of and/or operates the following hazardous waste management facilities covered by this guarantee:

Identification Number	Name and Address	Closure Amount
CAD 041 162 124	Missile Systems Group 8433 Fallbrook Avenue Canoga Park, CA 91304	$567,600
CAD 000 633 230	Electro-Optical & Data Systems Group 2000 E. El Segundo Blvd. El Segundo, CA 90245	118,105
CAD 063 109 243	Ground Systems Group 1901 W. Malvern Avenue Fullerton, CA 92634	392,100
CAD 096 882 147	Microelectronics Systems Division 2601 Campus Drive Irvine, CA 92715	57,734
CAD 076 071 737	Connecting Devices Division 17150 Von Karman Avenue Irvine, CA 92714	185,000

GM Hughes Electronics
General Motors Building
3044 W. Grand Boulevard
Detroit, Michigan 48202

May 21, 1991

CAT 080 012 867	Support Systems Division 1500 Hughes Way Long Beach, CA 90810	91,400
CAD 041 156 969	Hughes Research Laboratories 3011 Malibu Canyon Road Malibu, CA 90265	228,797
CAD 057 468 944	Microelectronic Circuits Division 500 Superior Avenue Newport Beach, CA 92658-8903	44,500
CAT 080 010 853	Radar Systems Group 2000 E. Imperial Highway El Segundo, CA 90245	180,156
CAD 060 897 063	Space & Communications Group 1920 E. Imperial Highway El Segundo, CA 90245	238,480
CAD 028 260 297	Santa Barbara Research Center 75 Coromar Drive Goleta, CA 93117	283,422
CAD 981 385 073	Santa Barbara Research Center 2100 South Blosser Santa Maria, CA 93454	253,428
CAD 041 666 819	Electron Dynamics & Microwave Products Division 3100 W. Lomita Blvd. Torrance, CA 90509	214,517
CAD 981 440 068	Space & Communications Group 19300 Gramercy Place Torrance, CA 90509	66,500
CAD 008 351 827	Hughes Simulation Systems, Inc. 1200 E. San Bernardino Road West Covina, CA 91790	51,077

May 21, 1991

3. "Closure plans" and "post-closure plans" as used below refer to the plans maintained as required by Division 30, Title 22, California Code of Regulations, for the closure and post-closure care of facilities as identified above.

4. For value received from Hughes Aircraft Company, guarantor guarantees to DHS that in the event that Hughes Aircraft Company fails to perform closure and post-closure care of the above facilities in accordance with the closure or post-closure plans and other permit or interim status requirements whenever required to do so the guarantor shall do so or establish a trust fund as specified in Sections 67009 and 67021, Title 22, California Code of Regulations, as applicable, in the name of Hughes Aircraft Company in the amount of the current closure or post-closure cost estimates.

5. Guarantor agrees that if at any time during or at the end of any fiscal year before termination of this guarantee the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by either registered or certified mail, notice to DHS and to Hughes Aircraft Company that he or she intends to provide alternate financial assurance as specified in Sections 67009 and 67021, as applicable, in the name of Hughes Aircraft Company. Within 90 days after the end of such fiscal year or other occurrence, the guarantor shall establish such alternate financial assurance unless Hughes Aircraft Company has done so.

6. The guarantor agrees to notify DHS by either registered or certified mail of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor within ten (10) days after commencement of the proceeding.

7. Guarantor agrees that within 30 days after being notified by DHS of a determination that guarantor no longer meets the financial test criteria or that he or she is disallowed from continuing as a guarantor of closure or post-closure care, he or she shall establish alternate financial assurance, as applicable, in the name of Hughes Aircraft Company unless Hughes Aircraft Company has done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the permit, the extension or reduction of the time of performance of closure or post-closure or any other modification or alteration of an obligation of the owner or operator pursuant to Division 30 of Title 22, California Code of Regulations.

9. Guarantor agrees to remain bound under this guarantee for so long as Hughes Aircraft Company must comply with the applicable financial assurance requirements for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by registered or certified mail to DHS and to Hughes Aircraft Company, such cancellation to become effective no earlier than 120 days after receipt of such notice by both DHS and Hughes Aircraft Company, as evidenced by the return receipts.

10. Guarantor agrees that if Hughes Aircraft Company fails to provide alternate financial assurance as specified in Sections 67003 through 67010, Title 22, California Code of Regulations, as applicable, and obtain written approval of such assurance from DHS within 90 days after a notice of cancellation by the guarantor is received by DHS from guarantor, guarantor shall provide such alternate financial assurance in the name of Hughes Aircraft Company.

11. Guarantor expressly waives notice of acceptance of this guarantee by DHS or by Hughes Aircraft Company. Guarantor also expressly waives notice of amendments or modifications of the closure and/or post-closure plan and of amendments or modifications of the facility permit(s).

The parties below certify that this document is being executed in accordance with the requirements of Article 17, Title 22, California Code of Regulations.

Effective date: May 21, 1991

GM Hughes Electronics Corporation

Bruce W. Alexander
Authorized Signature for Guarantor

Bruce W. Alexander
Typed or Printed Name of Person Signing

Treasurer and Chief Financial Officer
Title of Person Signing

Camellia Krist
Signature of Witness or Notary and Seal

Camellia Krist
Name of Witness or Notary

GM HUGHES
ELECTRONICS

Subsidiary of
General Motors

GUARANTEE made this May 21, 1991, by GM Hughes Electronics Corporation (GMHE), a business corporation organized under the laws of the State of Delaware, herein referred to as guarantor. This guarantee is made on behalf of our subsidiary Hughes Aircraft Company of 7200 Hughes Terrace, Los Angeles, California 90045, to any and all third parties who have sustained or may sustain bodily injury or property damage caused by sudden accidental occurrences arising from operation of the facilities covered by this guarantee.

RECITALS

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 40 Code of Federal Regulation 264.147(g) and 265.147(g) and Section 67030 of Title 22, California Code of Regulations.

2. Hughes Aircraft Company owns or operates the following hazardous waste management facilities covered by this guarantee:

Identification Number	Name and Address
CAD 041 162 124	Missile Systems Group 8433 Fallbrook Avenue Canoga Park, CA 91304
CAD 000 633 230	Electro-Optical & Data Systems Group 2000 E. El Segundo Blvd. El Segundo, CA 90245
CAD 063 109 243	Ground Systems Group 1901 W. Malvern Avenue Fullerton, CA 92634
CAD 096 882 147	Microelectronics Systems Division 2601 Campus Drive Irvine, CA 92715
CAD 076 071 737	Connecting Devices Division 17150 Von Karman Avenue Irvine, CA 92714

Gt jhes Electronics
General Motors Building
3044 W. Grand Boulevard
Detroit, Michigan 48202

CAT 080 012 867	Support Systems Division 1500 Hughes Way Long Beach, CA 90810
CAD 041 156 969	Hughes Research Laboratories 3011 Malibu Canyon Road Malibu, CA 90265
CAD 057 468 944	Microelectronic Circuits Division 500 Superior Avenue Newport Beach, CA 92658-8903
CAT 080 010 853	Radar Systems Group 180,156 2000 E. Imperial Highway El Segundo, CA 90245
CAD 060 897 063	Space & Communications Group 1920 E. Imperial Highway El Segundo, CA 90245
CAD 028 260 297	Santa Barbara Research Center 75 Coromar Drive Goleta, CA 93117
CAD 981 385 073	Santa Barbara Research Center 2100 South Blosser Santa Maria, CA 93454
CAD 041 666 819	Electron Dynamics & Microwave Products Division 3100 W. Lomita Blvd. Torrance, CA 90509
CAD 981 440 068	Space & Communications Group 19300 Gramercy Place Torrance, CA 90509
CAD 008 351 827	Hughes Simulation Systems, Inc. 1200 E. San Bernardino Road West Covina, CA 91790

This corporate guarantee satisfies Resource Conservation and Recovery Act (RCRA) and State third-party liability requirements for sudden accidental occurrences in the above-named Hughes Aircraft Company facilities for coverage in the amount of $2 million per facility for each occurrence and $2 million per facility per annual aggregate.

3. For value received from Hughes Aircraft Company, guarantor guarantees to any and all third parties who have sustained or may sustain bodily injury or property damage caused by sudden accidental occurrences arising from operations of the facilities covered by this guarantee that in the event that Hughes Aircraft Company fails to satisfy a judgment or award based on a determination of liability for bodily

injury or property damage to third parties caused by sudden accidental occurrences, arising from the operation of the above-named facilities, or fails to pay an amount agreed to in settlement of a claim arising from or alleged to arise from such injury or damage, the guarantor will satisfy such judgment(s), award(s), or settlement agreement(s) up to the limits of coverage identified above.

4. Guarantor agrees that if at any time during or at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within ninety (90) days, by certified mail, notice to the U.S. Environmental Protection Agency Regional Administrator for the Region in which the facilities are located and the State Department of Health Services (Department) and to Hughes Aircraft Company that he or she intends to provide alternate liability coverage as specified in 40 CFR 264.147 and 265.147, as applicable, and Sections 67027 and 67028 of Title 22, California Code of Regulations in the name of Hughes Aircraft Company. Within 120 days after the end of such fiscal year, the guarantor shall establish such liability coverage unless Hughes Aircraft Company has done so.

5. The guarantor agrees to notify the EPA Regional Administrator and the Department by certified mail of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within ten (10) days after commencement of the proceedings.

6. Guarantor agrees that within thirty (30) days after being notified by an EPA Regional Administrator or the Department, of a determination that guarantor no longer meets the financial test criteria or that he or she is disallowed from continuing as a guarantor, that alternate liability coverage shall be established as specified in 40 CFR 264.147 and 265.147 and Sections 67027 and 67028 of Title 22, California Code of Regulations in the name of Hughes Aircraft Company unless Hughes Aircraft Company has done so.

7. Guarantor reserves the right to modify this agreement to take into account amendment or modification of the liability requirements set by 40 CFR 264.147 and 265.147 and Sections 67027 and 67028 of Title 22, California Code of Regulations, provided that such modification shall become effective only if a Regional Administrator or the Department does not disapprove the modification within thirty (30) days of receipt of notification of the modification.

8. Guarantor agrees to remain bound under this guarantee for so long as Hughes Aircraft Company must comply with the applicable requirements of 40 CFR 264.147 and 265.147 and Sections 67027 and 67028 of Title 22, California Code of Regulations for the above-listed facilities, except as provided in paragraph 9 of this agreement.

9. Guarantor may terminate this guarantee by sending notice by certified mail to the EPA Regional Administrator for the Region in which the facilities are located, to the Department, and to Hughes Aircraft Company, provided that this guarantee may not be terminated unless and until Hughes Aircraft Company obtains, and the EPA Regional Administrator or the Department approves, alternative liability

coverage complying with 40 CFR 264.147 and 265.147 and Sections 67027 and 67028 of Title 22, California Code of Regulations.

10. Guarantor hereby expressly waives notice of acceptance of this guarantee by any party.

11. Guarantor agrees that this guarantee is in addition to and does not affect any other responsibility or liability of the guarantor with respect to the covered facilities.

EXCLUSIONS

This corporate guarantee does not apply to:

(i) Bodily injury or property damage for which the owner or operator is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that the owner or operator would be obligated to pay in the absence of the contract or agreement.

(ii) Any obligation of the owner or operator under a workers' compensation, disability benefits, or unemployment compensation law or any similar laws.

(iii) Bodily injury to:

(A) An employee of the owner or operator arising from, and in the course of, employment by the owner or operator; or

(B) The spouse, child, parent, brother, or sister of that employee as a consequence of, or arising from, and in the course of, employment by the owner or operator.

This exclusion applies:

(1) Whether the owner or operator may be liable as an employer or in any other capacity; and

(2) To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in paragraphs [A] and [B].

(iv) Bodily injury or property damages arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle, or watercraft.

(v) Property damage to:

[A] Any property owned, rented, or occupied by the owner or operator;

[B] Premises that are sold, given away, or abandoned by the owner or operator if the property damage arises out of any part of those premises;

[C] Property loaned to the owner or operator;

[D] Personal property in the care, custody, or control of the owner or operator;

[E] That particular part of real property on which the owner or operator or any contractor or subcontractors working directly or indirectly on behalf of the owner or operator are performing operations, if the property damage arises out of these operations.

I hereby certify that the wording of this guarantee is identical to the wording specified in 40 CFR Section 264.151(h)(2) with additional citations to the California Code of Regulations.

Effective date: May 21, 1991

GM Hughes Electronics Corporation

Name of Guarantor

Bruce W. Alexander

Authorized Signature for Guarantor

Bruce W. Alexander

Typed or Printed Name of Person Signing

Treasurer and Chief Financial Officer

Title of Person Signing

Camellia Krist

Signature of Witness or Notary and Seal

Camellia Krist

Name of Witness or Notary

Why are Corrective Actions Necessary

There is **no** immediate health risk because people are not currently exposed to the contamination. However, because exposure to elevated levels of volatile organic compounds and lead can cause adverse health effects, the California Department of Toxic Substances Control (DTSC) recommended that a plan be developed to protect current and future occupants of the property. DTSC will oversee implementation of the plan and ensure that it is performed in a manner that does not harm people or the environment.

History and Operations at site

Hughes Aircraft Company (Hughes) began operations on this property in 1967. Prior to 1967, the Site was mostly used for farming activities.

During Hughes operations, six waste management units, including two underground solvent storage tanks, were operated. The former underground storage tanks, waste management units, and all historic site facility operations were conducted only on the northern portion of the site where the existing buildings are located. The southern portion of the site has only been used as a parking lot.

The Boeing Company purchased the Hughes facility in 2000. Facility operations located in Buildings 230, 232, 233, and 234 were sold to L3 Communications, Inc. in 2005. The entire property was sold to RREEF America REIT III Corporation GG2 (RREEF) in October 2006.

Environmental Investigations

Environmental investigations have been on-going on the property since 1983. In 1983, two underground storage tanks were removed under the oversight of the Regional Water Quality Control Board.

In 1994, DTSC approved the closure of the four remaining waste management units including a barrel storage yard, a vaulted solvent storage tank, and two former container storage areas. A workplan, called a Corrective Measures Study, was developed in 1995 for cleanup of soils in the areas of the two removed tanks and it was subsequently approved by DTSC in June 1996.

Several studies and amendments to this document were made over the next several years.

During 2005 and 2006, soil, soil vapor, indoor air, and groundwater sampling was done across the entire property under DTSC oversight. This was done to collect sufficient data to determine how to clean up the property. A soil vapor extraction pilot study was initiated in 2007 near the area where one of the underground storage tanks was removed during the 1983 removal action.

Soil vapor extraction is a vacuum-like system that removes soil gas from beneath the ground surface, through a treatment system, before being released into the atmosphere.

Soil gas is the air space between soil particles beneath the ground surface. The indoor air sampling was conducted inside buildings on the former Hughes property.

Human Health Risk Assessment

The new data collected from the 2005-2006 sampling events was used to complete a site-wide Human Health Risk Assessment. This Assessment was done to determine if there is any increased risk to human health based on the type and amount of contamination found at the Site. The Assessment was completed in 2007 and approved by DTSC in 2008.

What are Volatile Organic Compounds

Volatile Organic Compounds (VOCs) are chemicals that easily dissipate from liquids to vapors and include solvents that are used during industrial and manufacturing processes, for degreasing metal parts, and in the dry cleaning process. The specific solvents found at this Site include tetrachloroethylene (PCE) and trichloroethylene (TCE).

Cleanup Activities

In conjunction with the removal of approximately 24 cubic yards of contaminated soil from the southern area of the RREEF property, a workplan was developed to remove about 20 cubic yards of contaminated soil from the southwest corner of the neighboring Alcoa property where VOCs were also found. The excavation area was about 60 feet long along the southern parcel of the RREEF property by 3 feet wide by 3 feet deep. This removal was done to enhance soil vapor extraction being done by Alcoa in this area.

The excavation area in the southern parcel of the RREEF property measured approximately 10 to 15 feet by 15 feet by 3 to 5 feet deep. Prior to back-filling the excavation areas, the bottom of the excavations were lined with vapor barriers to prevent any residual solvent vapors from moving up into an area that could be accessed by people, and to enhance the operating soil vapor extraction system. These areas were then filled with clean soil. The removal action was completed in September 2008 under DTSC's oversight.

Property Parceling Document

The current plan is for the southern parcel only. Environmental monitoring, a Soil Management Plan, an Operations and Maintenance Plan, and a Land Use Covenant will be required as part of DTSC's concurrence with the proposed Plan. The Soil Management Plan will detail the steps to be followed anytime the soil within specified areas of the southern parcel will be disturbed, and will outline reporting requirements. A vapor barrier will be installed beneath any buildings constructed in the future within the southern parcel to prevent any residual contaminant vapors from migrating up into an area that could be accessed by people. The Land Use Covenant will restrict use of the southern parcel to commercial/industrial operations.

Upon approval and implementation of the soil management and maintenance plans for the southern area, RREEF plans to split the property into northern and southern parcels. The southern parcel containing the parking area, would be approximately 9 acres of the RREEF property. The northern parcel would be approximately 17 acres including the five existing buildings where all historical and current operations occur.

Results of the Assessment indicate that concentrations of TCE and PCE in soil near the southeast corner of the site are above levels that could pose a significant health risk for people working inside the buildings. Additional contaminants were found in soil throughout the Site below levels that could pose a significant risk to people or the environment. The draft workplan to clean-up the contamination was accepted by DTSC.

Where to Find the Documents

The Property Parceling Document, Site Assessment Summary Report, Human Health Risk Assessment and other related documents for the former Hughes property are available for review at the following locations:

Torrance Public Library
3301 Torrance Boulevard
Torrance, California 90503
Phone: (310) 618-5959
Hours: Monday – Thursday 10:00 am – 9:00 pm
Friday 10:00 am – 6:00 pm
Saturday 10:00 am – 5:30 pm

Department of Toxic Substances Control
Documents are available at
www.envirostor.dtsc.ca.gov/public

→ Type "Torrance" in the City entry field
→ On the "Boeing Satellite Systems" line, click on "[Report]" to retrieve the Former Hughes webpage
→ On the Summary Page, click on the "Activities" tab above the Site Information Section. This will show the on-going and completed activities for the Site.
→ Click on "[View Docs]" to the left of any line to retrieve that document.

A computer is available in the DTSC file room for your use.

CAD 041 6666 819 8A

Who to Contact for Information

If you have any questions about the project or cleanup activities, please contact:

Wayne Lorentzen
DTSC Project Manager
(916) 255-3883
wlorentz@dtsc.ca.gov

Yvette LaDuke
DTSC Public Participation
1-866-495-5651, press 3, then press 2
yladuke@dtsc.ca.gov

Media Inquiries:
Jeanne Garcia
DTSC Public Information Officer
(818) 717-6573
Jgarcia1@dtsc.ca.gov

Notice to Hearing-Impaired Individuals

You can obtain additional information about the site by using the California State Relay Service at 1 (888) 877-5378 (TDD). Ask them to contact Yvette LaDuke at (818) 717-6569 regarding the RREEF property.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

The mission of the Department of Toxic Substances Control is to provide the highest level of safety, and to protect public health and the environment from toxic harm.

State of California

Cal/EPA

Fact Sheet, October 2009

Corrective Measures Plan for Soil Contamination at the RREEF Torrance Campus (former Hughes Aircraft Company) Property Available for Review

A draft plan for the management and maintenance of soil contaminated with volatile organic compounds at the former Hughes Aircraft Company, Electron Dynamics Division is open for public review and comment. The plan contained within the Property Parceling Document, proposes a soil management plan and institutional controls for the southern portion of the RREEF property to protect people from the contamination. The southern area of the property is used for parking. A separate plan is proposed for contamination located in the northern area.

The site is located at 3100 Lomita Boulevard, in Torrance, California.

This Fact Sheet provides a brief summary of:

- Why Are Corrective Actions Necessary
- History and Operations at the Site
- Environmental Investigations
- What are Volatile Organic Compounds
- Cleanup Activities
- Property Parceling Document
- Human Health Risk Assessment
- Where to Find the Documents
- Who to Contact for Information

PUBLIC COMMENT PERIOD

November 2, 2009 to December 2, 2009

PUBLIC MEETING

November 18, 2009 – 6:30pm
Bread of Life Church
2780 Lomita Boulevard
Torrance, CA

The Property Parceling Document and other related project documents for this site are available for review and public comment at the locations listed on page 3. We will make a final decision after all public comment has been reviewed and considered. Please submit written comments in the enclosed postage paid envelope postmarked **by December 2, 2009**; or by email before the deadline date no later than 5 p.m. to:

Yvette LaDuke, Public Participation Specialist, yladuke@dtsc.ca.gov

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YVETTE LADUKE
RREEF TORRANCE CAMPUS
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
9211 OAKDALE AVE
CHATSWORTH CA 91311-9562

COMMENT FORM AND MAILING COUPON

RREEF Torrance Campus

Former Hughes Aircraft Company

If you use this form to send us your comments, please include your name and address.
All written comments must be postmarked no later than **December 2, 2009**. Please send this form to:

Yvette LaDuke, Public Participation Specialist
Department of Toxic Substances Control
9211 Oakdale Avenue
Chatsworth, CA 91311

You may also email this same information to: yladuke@dtsc.ca.gov

Name: _____

Address: _____

Affiliation (if any): _____

Phone number (optional) _____

Comments: (If you need more space, please feel free to use another sheet of paper)

_____

Our mailing lists are only used for keeping you informed of our activities. However, they are considered public records and, if requested, may be subject to release.

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 425
Long Beach, CA 90802-4444

December 22, 1995

Ms. Ann Saffell
Supervising Engineering Geologist
Ground Water Protection Section
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Ms. Saffell:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION
3100 WEST LOMITA BOULEVARD, TORRANCE, CALIFORNIA
(EPA ID NO. CAD041666819)

The Department of Toxic Substances Control (DTSC) is presently overseeing Corrective Action per the Resource, Conservation and Recovery Act (RCRA) at the Hughes Aircraft Company, located at 3100 West Lomita Boulevard in Torrance, California. The contamination at the facility consists of chlorinated solvents (trichloroethylene (TCE), and perchloroethylene (PCE), and 1,1-dichloroethylene (1,1-DCE)) in the soil and groundwater. The source of the solvents in the soil is a former underground tank that was removed in 1983. The former tank location is now under a building.

The facility has completed the site characterization phase of Corrective Action (RCRA Facility Investigation, or RFI) and an evaluation of treatment technologies (Corrective Measures Study, or CMS). The plume of chlorinated solvents in groundwater resides in the upper portion of the Gage Aquifer at the site (90'-113') and extends beyond the facility boundary (TCE concentration of approximately 50 ug/L).

Groundwater monitoring data collected over the time period 1991-1995 show that the concentrations of solvents in groundwater

have been increasing over time. Due to access constraints, the facility has not sufficiently characterized the soil to rule out soil as a continuing source of solvent to groundwater. The available soil data does not account for the solvent concentrations in groundwater.

The facility has proposed three alternatives for groundwater cleanup. These are: 1) No action, based on a baseline draft health risk assessment (HRA). Hughes did not consider groundwater as drinking water in the HRA. (See attached letter from Hargis & Associates, Inc. to Ms. Christine Brown of my staff, p.2 (Attachment 1)), 2) Source Control, whereby a limited pump-and-treat system would be installed. This system would reduce the contaminant concentrations in groundwater but would allow the plume to migrate off site (See Attachment 2, figure taken from the CMS Report dated August 9, 1995 and amended per letter dated November 20, 1995 from Hargis & Associates to Ms. Christine Brown), and 3) Drinking Water Alternative, whereby Hughes would install a pump-and-treat system that they claim would reduce levels of contaminants to Maximum Contaminant Levels (MCLs). We do not believe that this system will achieve MCLs in a practical time frame, based on information contained in the attached article (Attachment 3) titled "Pump-and-Treat Accomplishments: A Review of the Effectiveness of Ground Water Remediation in Santa Clara Valley, California", by G. Bartow and C. Davenport, published in the Spring 1995 issue of the journal titled Groundwater Monitoring Report. See Attachment 1 for a detailed description of the three alternatives.

On the basis of the attached article (Attachment 3), DTSC believes that pump-and-treat technology may achieve clean-up levels at this site in the range of 100-400 ug/L for TCE, and 50-100 ug/L for other solvents present at lower initial concentrations. Another technology, such as air sparging, could help reach lower levels, if desired.

DTSC requests your guidance on selecting the most appropriate clean-up levels for ground water at this facility, and requests that you respond in writing by January 19, 1996.

DTSC is willing to convene a meeting, if needed, to discuss the matter in more detail.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

Attachments

cc: Ms. Carmen Santos H-3-1
Region 4 Liason
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Dr. James Lents
Executive Officer
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

Chief Ann Psuda
Los Angeles County Fire Department
Health and Hazardous Materials Division
5825 Rickenbacker
Commerce, California 90040

Mr. Nhan Bao
Water Resource Control Engineer
Underground Tanks
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754-2156

cc: Mr. Allen Winans
Department of Toxic Substances Control
Permitting Division, HQ-24
P.O. Box 806
Sacramento, California 95812

Mr. Clay Booher
Hazardous Substances Engineer
Department of Toxic Substances Control
Site Mitigation
P.O. Box 806
Sacramento, California 95812

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STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 425
Long Beach, CA 90802-4444

June 6, 1996

Dr. Michael Yalch
Hughes Aircraft - Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, California 90509-2999

Dear Dr. Yalch:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION (EPA ID NO. CAD041666819) CORRECTIVE MEASURES STUDY REPORT REVIEW

The Department of Toxic Substances Control (DTSC) has reviewed the Corrective Measures Study Report (CMS Report) dated August 11, 1995 for your facility and deems it administratively and technically complete, except for Appendix D, Health Risk Assessment (HRA). The HRA is being reviewed separately.

Before the remedy is selected and public notice is issued, cleanup levels for volatile organic compounds (VOCs) in groundwater must be established. The Los Angeles Regional Water Quality Control Board (RWQCB) has provided the recommendation that background levels for Volatile Organic Compounds (VOCs) should be used, unless deemed otherwise (see enclosed letter). DTSC concurs with this recommendation.

In the CMS Report dated August 9, 1995, no soil remedial alternatives were presented. The basis for this action is that the Health Risk Assessment (HRA) presented in Appendix D of the report indicated that no risk to human health or the environment was posed by contaminants remaining in the soil. DTSC will defer the remedial decision for the soil until the HRA has been approved.

Three remedial alternatives for groundwater were presented: (1) No action based on the HRA mentioned above; (2) Remedial well field A, which proposed a limited pump-and-treat option that would reduce mass of VOCs, and (3) Remedial well field B, which proposed to remediate VOCs below Maximum Contamination Levels (MCLs) established by the State of California. DTSC does not concur with the no-action alternative because it is not consistent with the RWQCB recommendation. Of the two well fields presented in the CMS report, DTSC plans to select well field B as the most appropriate remedy, since the ground water modeling results indicate that it most closely will achieve the clean-up criteria specified by RWQCB.

DTSC intends to public notice the proposed remedy in September 1996. To assist us in preparation for this event, DTSC requests that you provide us with an updated mailing list including local and elected officials, a CMS fact sheet similar to the one you prepared for the RFI, and the completed Environmental Information Form (enclosed). Please provide this information within 30 days of your receipt of this letter.

If you have any questions, please contact Ms. Christine Brown of my staff at (310) 590-4879.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

Enclosure

cc: Ms. Paula Bisson H-3-1
Section Chief
Permits Section
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Mr. Nhan Bao
Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Dr. James Lents
Executive Officer
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

Mr. Robert Ghirelli
Executive Officer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

cc: Chief Ann Psuda
Los Angeles County Fire Department
Health and Hazardous Materials Division
5825 Rickenbacker
Commerce, California 90040

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

January 27, 1995

Dr. Michael Yalch
Hughes Aircraft - Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, California 90509-2999

Dear Dr. Yalch:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION (EPA ID NO. CAD041666819). CMS WORKPLAN APPROVAL.

The Department of Toxic Substances Control (Department), has reviewed the revised CMS Workplan dated 1/9/94 and hereby approves the revised Workplan.

The Department has reviewed the Health and Safety Plan that was submitted on 10/10/94 and has provided comments per the attached memo.

The Department would like you to provide progress reports on a quarterly basis for groundwater monitoring and data evaluation. Summary reports at the end of the hydraulic testing and groundwater modeling activities are not required as the CMS Report is scheduled to be submitted within two weeks of the completion of the groundwater modeling activity. Please notify the Department at least 7 working days in advance of any field activities.

If you have any questions please feel free to contact me at (310) 590-4880 or Ms. Christine Brown of my staff at (310) 590-4879.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Division

Enclosure

cc: See next page.

recycled paper

cc: Mr. Frank Gardner (H-3-2)
Environmental Engineer
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-2901

Mr. Nhan Bao
Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Ms. Paula Bisson H-3-1
Section Chief
Permits Section
U. S. Environmental Protection Agency
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75 Hawthorne Street
San Francisco, California 94105

Dr. James Lents
Executive Officer
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

Mr. Robert Ghirelli
Executive Officer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Chief Ann Psuda
Los Angeles County Fire Department
Health and Hazardous Materials Division
5825 Rickenbacker
Commerce, California 90040

Ms. Carmen Santos-Prior
DTSC Regional Coordinator
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

cc: Ms. Marsha Mingay
Public Participation Unit
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. Mohinder S. Sandhu, P.E., Chief
Facility Permitting Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Acting Branch Chief
Statewide Compliance Division
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

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STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 425
Long Beach, CA 90802-4444

December 5, 1994

Dr. Michael Yalch
Hughes Aircraft - Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, California 90509-2999

Dear Dr. Yalch:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION (EPA ID NO. CAD041666819). CMS WORKPLAN REVIEW.

The Department of Toxic Substances Control, Geotechnical Services Unit of the Facility Permitting Division has reviewed the CMS Workplan submitted in October 1994 for your facility. As a result of this review, we request that you provide additional information as described in the attached memo dated November 9, 1994.

Please provide this information within 30 days of receipt of this letter.

If you have any questions please feel free to contact me at (310) 590-4880 or Ms. Christine Brown of my staff at (310) 590-4879.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Division

Enclosure

cc: Acting Branch Chief
Statewide Compliance Division
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

cc: Mr. Frank Gardner (H44)
Environmental Engineer
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-2901

Mr. Nhan Bao
Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Ms. Paula Bisson H-3-1
Section Chief
Permits Section
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Dr. James Lents
Executive Officer
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765

Mr. Robert Ghirelli
Executive Officer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Chief Ann Psuda
Los Angeles County Fire Department
Health and Hazardous Materials Division
5825 Rickenbacker
Commrce, California 90040

Ms. Carmen Santos-Prior
DTSC Regional Coordinator
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

cc: Ms. Marsha Mingay
Public Participation Unit
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. Mohinder S. Sandhu, P.E., Chief
Facility Permitting Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
400 P Street, 4th Floor
P.O. Box 806
Sacramento, CA 95812-0806

(916) 323-3646

MEMORANDUM

TO: Christine Brown
Facility Management Branch, R4-5
245 West Broadway, Suite 350
Long Beach, California 90802

FROM: Allen R. Winans
CEG No. 1402
Permitting Division, HQ-24
PO Box 806
Sacramento, CA 95812-0806

CONCUR: Brian Lewis, Chief
Permitting and Enforcement
Geological Services Unit
CEG No. 1414

DATE: November 9, 1994

SUBJECT: HUGHES TORRANCE CORRECTIVE MEASURES STUDY WORKPLAN

INTRODUCTION

I have reviewed the Corrective Measures Study Work Plan, Hughes Aircraft Company, Electron Dynamics Division, Torrance, California (the *CMS Workplan*) an unsigned draft, dated October 10, 1994. The CMS Workplan was produced by Hargis + Associates, Inc (*H+A*).

Soil contamination has been investigated and appears to correlate with historic spent solvent tank locations. The tanks were removed in 1983; site improvements have covered the old tank locations. Though soil contamination has not been traced to below 30 feet, ground water at 80 feet is contaminated by the same compounds and the plume is areally tied to the known sources.

Contaminated ground water at 80 feet below surface is associated areally with removed tank locations. Contaminants in ground water are volatile organic compounds: dichloroethene (*DCE*), trichloroethene (*TCE*) trichloroethane (*TCA*), and tetrachloroethene (*PCE*).

Ground water and contaminant movement have been investigated, the data appear to correlate. TCE concentrations allow for description of the plume. The general site location is in the midst of historical industry operations and a tank farm. Offsite sources appear to describe other plumes differentiated from the TCE plume by location and chemistry.

The CMS Workplan contains general descriptions of the tasks associated with evaluation of the alternatives, Standard Operating Procedures (*SOPs*, Appendix A), a Health and Safety Plan (Appendix B), a CMS Report Outline (Appendix C), and Project Personnel Résumés (Appendix D). Appendices B, C, and D are not reviewed here.

COMMENTS AND RECOMMENDATIONS

The CMS Workplan proposes that the soil portion of the study be a risk assessment to evaluate the exposure scenarios and impact the impacts on ground water from leaving residues in place. If removal is required, then the only selected corrective action measure (*CAM*) is soil gas extraction, since access is restricted. No treatability study is anticipated as the constituents compose a typical suite and treatment methods and costs are known. Hughes will submit a treatability study plan should the assumptions fail.

I recommend that Hughes Aircraft, if removal is determined to be necessary, include evaluation of enhanced soil gas removal by means such as steam injection.

The CMS Workplan proposes that ground water portion of the study be evaluation of various extract and treat options: extract, extraction-injection cell(s), liquid phase carbon adsorption, air stripping with vapor phase carbon adsorption, and ultraviolet/chemical oxidation. Also a part of the evaluation will be analysis of another round of ground water samples and installation and pumping tests of the proposed extraction well (including a

temporary treatment unit for the generated water). Disposal options to be evaluated are surface discharge of treated water and injection of treated water. No treatability study is anticipated as the constituents compose a typical suite and treatment methods and costs are known. Hughes will submit a treatability study plan should the assumptions fail.

The SOPs do not contain descriptions of the methods of extraction well screen slot size selection. The screen slot size must be based on retaining the filter pack which must be designed to retain the formation material. If needed DTSC can provide Hughes Aircraft with acceptable screen slot design references.

Hughes Aircraft should submit the screen slot size design criteria to DTSC for review and approval.

The CMS Workplan lacks detail in the descriptions of the pumping tests.

> The proposed step-drawdown test pumping ranges are not provided. What data exist to indicate the aquifer will be adequately stressed to identify the optimum rate for the long-term pumping test ? Rationale for an expected discharge of 75 gallons per minute (*gpm*) during the long-term pumping test are not provided. What data exist to indicate (prior to the step-drawdown tests) that 75 gpm is a good estimate ? For DTSC to approve a workplan that calls for handling 75 gpm, the 75 gpm must be a pumping rate that is reasonable.
>
> *I recommend that the rationale and data for the rationale be provided for DTSC review and approval.*
>
> The proposed observation locations for the pumping tests are not provided.
>
> *I recommend that all fourteen wells should be monitored to some degree. Wells near to the extraction well, in all directions, should be in the transducer net wired to an electronic data logger. Wells remote from the extraction well may be monitored by hand. Observation well locations should be submitted to DTSC for review and approval.*
>
> The frequency of water level measurements during the pumping tests are too infrequent during the start-up of each test. Curve-matching techniques for aquifer analyses rely heavily on start-up drawdowns.
>
> *I recommend that an electronic data logger should be used to obtain frequent early water level data, programmed to pick water levels at logarithmically greater intervals throughout the test; key observation wells should be plugged into the transducer net as well.*

The use of a 5 to 55 gallon drum to calibrate flows is inappropriate when expecting flows in excess of 75 gpm. Calibrated meters or other devices are necessary. Also, pumps do not operate at set rates, but drift as temperature changes, foot valves move, or input power changes. Deviations in the pumping rate impact the rate of drawdown which in turn alters the drawdown curve. Hence, the pumping rate must be checked periodically to ensure a constant rate thus allowing the drawdown curves to be used properly. The frequency of checking and adjusting the flow rate must be specified.

I recommend that flow rates be calibrated using devices that can readily handle the expected range of flows. I recommend that pumping rates be checked and adjusted at least every half hour during the step-drawdown tests and every two hours during the long-term test. Times of pumping rate checking and adjustments should be recorded on field data sheets and included in the CMS report.

Disposal of treated water into a storm drain (pending an Industrial Waste Discharge permit) may be approved, or not, or approved with testing before discharge provisions. A contingency for outright denial or approval with testing prior to discharge is not provided.

I recommend that contingencies for disposal of water derived from the pumping tests be provided to DTSC for review and approval.

If you have any questions or comments, please call me at (916) 323-3646 or CALNET at 8-473-3646.

cc: Karen Baker, Senior Engineering Geologist
Dept. of Toxic Substances Control
Region 4, R4-5
245 West Broadway, Suite 350
Long Beach, California 90802

Nhan Bao
LARWQCB
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

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STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

October 11, 1994

Dr. Michael Yalch
Hughes Aircraft - Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, California 90509-2999

Dear Dr. Yalch:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION (EPA ID NO. CAD041666819). CORRECTIVE ACTION CONSENT AGREEMENT.

Enclosed are two copies of a Corrective Action Consent Agreement for your consideration and one copy with the changes in bold for your reference. This is a revision of the copy of the Consent Agreement dated June 29, 1994. This revised consent agreement has incorporated your comments pertaining to the June 29, 1994 copy except for the language in the Access section and the section on Oversight Cost Reimbursement. This latter section is required by the Department of Toxic Substances Control Headquarters. However, note that the sections on Delay in Performance/Stipulated Penalties and Force Majeure have been dropped from this revision.

We request you to sign both final copies and return them to me at the letterhead address by October 20, 1994. These will then be signed by Mr. Mohinder S. Sandhu, Chief of the Facility Permitting Branch. Afterwards, one copy duly signed will be mailed to you.

The scope of the revised consent agreement includes proposal of corrective measures to remediate both soil and groundwater releases, means of providing the public with an opportunity to comment on the proposed corrective measures, and implementation of the corrective measure selected by the Department.

If you have any questions on the Consent Agreement or the contents of this letter, please feel free to contact me at (310) 590-4880 or Ms. Christine Brown of my staff at (310) 590-4879.

Sincerely,

Christine P. Brown

for D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

Enclosure

cc: Acting Branch Chief
Surveillance and Enforcement Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. Frank Gardner (H44)
Environmental Engineer
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-2901

Mr. Nhan Bao
Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Mr. Tomas Torres
DTSC Regional Liason
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Ms. Marsha Mingay
Public Participation Unit
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

cc: Mr. Mohinder S. Sandhu, P.E., Chief
Facility Permitting Branch
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802

Mr. Watson Gin, Chief
Permitting Division
Hazardous Waste Management Program
Department of Toxic Substances Control
Sacramento, California 95812-0806

NOTICE

The official RCRA Permit file for this facility has been transferred to the California Department of Health Services under Phase II A authorization. The applicant is under no obligation to inform EPA of changes at this facility. This file may therefore be incomplete.

2/15/83

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 charac[illegible] [illegible]nch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

S. [illegible] IRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

EPA I.D. NUMBER: F CAD041666819

LABEL ITEMS

EPA I.D. NUMBER	CAD041666819
III. FACILITY NAME	HUGHES AIRCRAFT COMPANY*
V. FACILITY MAILING ADDRESS	3100 W LOMITA BLVD TORRANCE, CA 90509
VI. FACILITY LOCATION	3100 W LOMITA BLVD TORRANCE, CA 90509

18 NOV 198[illegible]

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge to waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges to waters of the U.S.** other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge to waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP HUGHES AIRCRAFT COMPANY

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 MAHLOW PAUL, JR. [illegible]	213 517 5032

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 3100 W. LOMITA BL.

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 TORRANCE,	CA	90509

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 3100 W. LOMITA BLVD.

B. COUNTY NAME

LOS ANGELES

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 TORRANCE	CA	90509	

EPA Form 3510-1 (6-80)

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
C 7 (specify)	C 7 (specify)
C. THIRD	**D. FOURTH**
C 7 (specify)	C 7 (specify)

VIII. OPERATOR INFORMATION

A. NAME: C 8 HUGHES AIRCRAFT COMPANY

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☒ NO (66)

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (88) (specify)

D. PHONE (area code & no.): C A (15) 213 517 6000

E. STREET OR P.O. BOX: 3100 W. LOMITA BLVD

F. CITY OR TOWN: C B TORRANCE

G. STATE: CA

H. ZIP CODE: 90509

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO (52)

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): C 9 T N I N/A	**D. PSD** (Air Emissions from Proposed Sources): C 9 T P I
B. UIC (Underground Injection of Fluids): C 9 T U I N/A	**E. OTHER** (specify): C 9 T W I M01538 - M01539 (specify) Air Quality Management District Permit
C. RCRA (Hazardous Wastes): C 9 T R I N/A	**E. OTHER** (specify): C 9 T W I M0154 - M01543 (specify) Air Quality Management District Permit

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Engineering and manufacturing of electronic components and devices.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive	W. H. Christoffers	11/5/80

COMMENTS FOR OFFICIAL USE ONLY

C

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 charact[illegible]nch).

[illegible]m Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

[illegible]ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

S	F	C	A	D	0	4	1	6	6	6	8	1	9	T/A	C
															1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
23	24 - 29	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)* (71)

[ ] 2. NEW FACILITY *(Complete item below.)* (71)

C	YR.	MO.	DAY
8	6 7	0 4	1 4
15	73 74	75 76	77 78

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY
73 74	75 76	77 78

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS (72)

[ ] 2. FACILITY HAS A RCRA PERMIT (72)

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

S		T/A	C
C	DUP		1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. 1. AMOUNT	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	9600	G		7				
2	S 0 2	6000	G		8				
3					9				
4					10				

CONTINUE ON REVERSE

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** – For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 3

Continued from page 2.
NOTE: Photocopy this page before completing you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W C A D 0 4 1 6 6 6 8 1 9 — T/A C 1	W DUP — T/A C 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	13,660	P	S01	
2	F002	No sludge-this quantity added line#1	G	S01	
3	F003	62,400	P	S02	
4	F005	13,000	P	S02	
5	F007	11,900	P	S01	
6	F008	No smuldge - this quantity added line#5	G	S01	
7	F015	21,600	P	S01	
8	F017	720	P	S02	
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

S F | T/A | C 6

V. FACILITY DRAWING

All **existing** facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
33 48 37 N	118 20 25 W

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER *	2. PHONE NO. *(area code & no.)*
E Hughes Aircraft Company Bldg. 237	213-517-6000

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F 3050 Lomita Blvd.	G Torrance	CA	90509

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive	[signature]	11/5/80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive	[signature]	11/5/80

CONTINUE ON PAGE 5

* See Attachments for additional legal owners

FORM 1 GENERAL

EPA I.D. NUMBER CAD041666819

X. EXISTING ENVIRONMENTAL PERMITS Continued

South coast Air Quality Management District numbers (operation permits for degreasers):

M01539

M01541

M01543

EPA I.D. #: CAD04166819

1. The legal owners of buildings 230 and 231 are Teachers Insurance and Annuity Corporation, P.O. Box 1530, Grand Central Station, New York, New York 10017. The signatures of the owners have been requested and necessary forms mailed, but as of this date not yet received.

2. Bldg. 237 is owned by Hughes Aircraft.

3. Buildings 235, 238, 239, and 243 have no processes for the purpose of storing, generating or disposing of hazardous wastes.

Building 240
3415 West Lomita Blvd.
Torrance, CA 90509

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NEVADA BROKERS INC		11-5-80
Name (print or type)	Signature	Date

Nevada Brokers, Inc.
E. P. Garnier
448 S. Canon Dr.
Beverly Hills, CA

CAD041666819

Building 236
2555 West 237th St.
Torrance, CA 90509

IX. OWNER CERTIFICATION

I certify ~~under penalty of law~~ that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

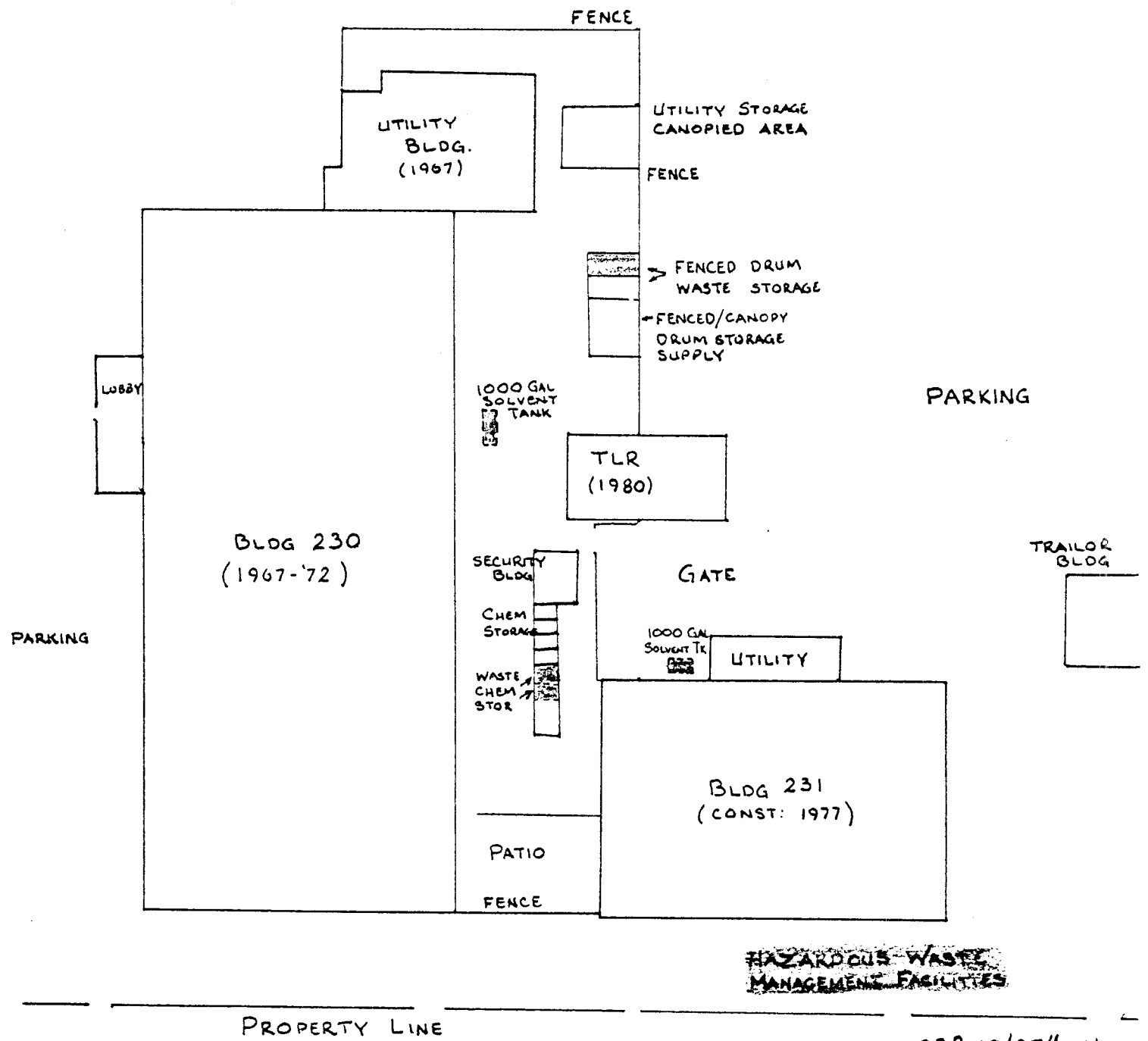
Name (print or type)	Signature	Date
Richard H. & Patricia S. Meine 2555 W. 237th St. Torrance, CA 90509		

CAD041666819

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4*

ATTACHMENT 2



← LOMITA BLVD

HUGHES AIRCRAFT CO.
3100 W. LOMITA
TORRANCE, CALIF.
90509

33° 48' 37" N
118° 20' 25" W

NO: INTAKE/DISCHARGE STRUCTURES
FLUID INJECTION SITES
SPRINGS, SURFACE WATER, DRINKING WATE WELLS

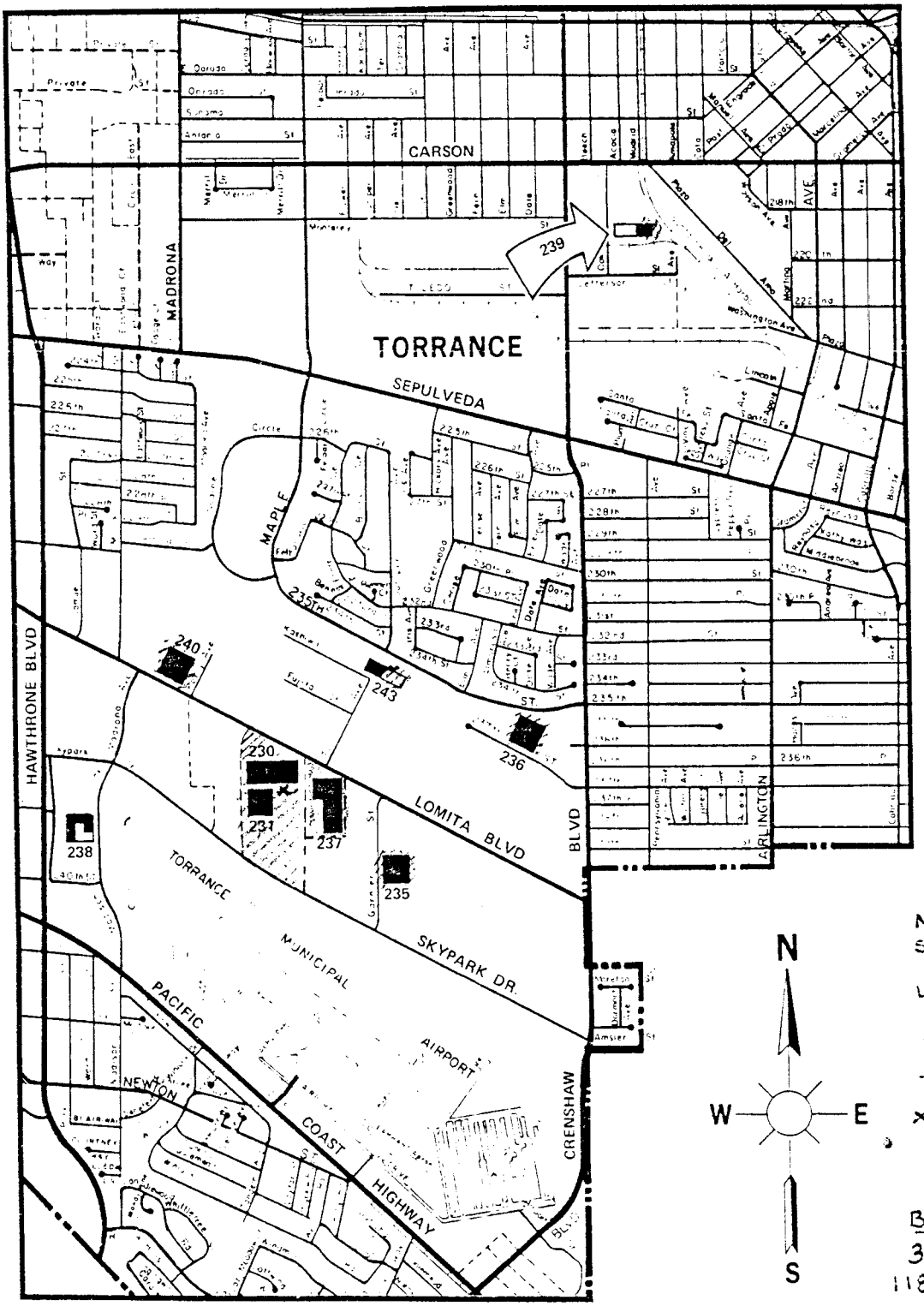
SCALE 1 IN = 100 FT

COPY FROM DESIGN BY M. FLINN

CAD041666819

ATTACHMENT 1

TORRANCE BUILDING SITES



NO INTAKE/DISCHARGE STRUCTURES, FLUID INJECTION LOCATIONS, SPRINGS, SURFACE WATER, DRINKING WATER WELLS.

X HAZ. WASTE MGT FACILITY.

B 230 COORD.
33°48'37 N.
118° 20' 25 W

BLDG.	ADDRESS	SQ. FT.	
230	3100 LOMITA BLVD.	236,364	LEASE
231	3100 LOMITA BLVD	80,832	"
235	24120 GARNIER ST	66,000	"
236	2555 237TH ST.	22,058	"
237	3050 LOMITA BLVD	49,385	OWN
238	23822 HAWTHORNE BLVD.	7,500	LEASE
239	1840 OAK ST.	9,000	"
240	3415 LOMITA BLVD.	34,000	"
242	23510 TELO AVE.	6,600	"

OPEN MAR '81

SCALE FEET
2000 1000 0 1000 2000

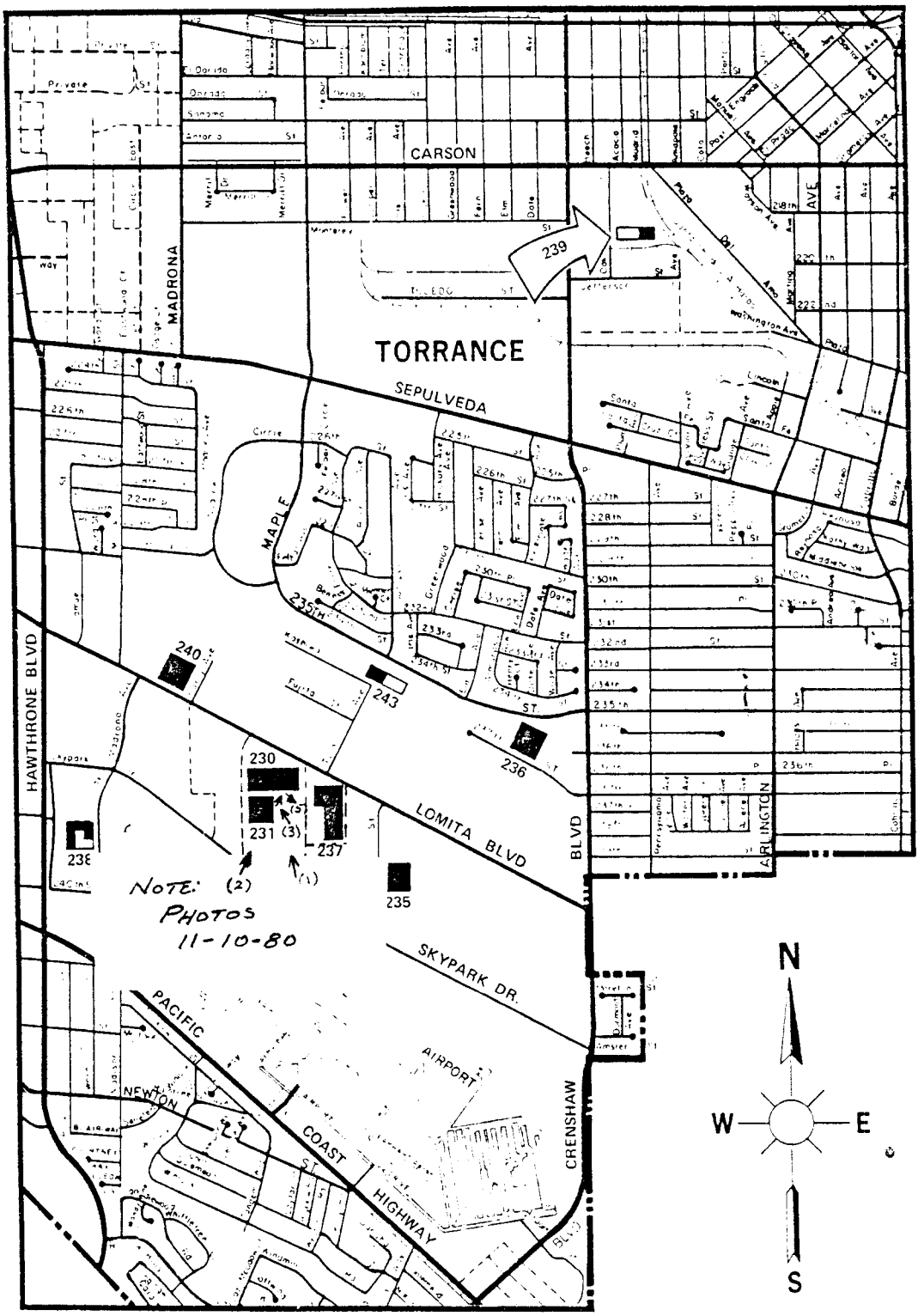
---PROPERTY LINE FOR B-237

OWN ....
LEASE ....

CAD041666819

AD041666819

TORRANCE BUILDING SITES



BLDG.	ADDRESS	SQ. FT.
230	3100 LOMITA BLVD.	236,364
231	3100 LOMITA BLVD	30,832
235	24120 GARNIER ST	66,000
236	2555 237TH ST.	22,058
237	3050 LOMITA BLVD	49,385
238	23822 HAWTHORNE BLVD.	7,500
239	1840 OAK ST.	9,000
240	3415 LOMITA BLVD.	34,000
242	23510 TELO AVE.	6,500

OPEN MAR '81

SCALE FEET

2000 1000 0 1000 2000

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

RECORDS SEPARATOR PAGE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

WARNING LETTER

CERTIFIED MAIL NO. P 999 783 232
RETURN RECEIPT REQUESTED

In Reply Refer To: CAD041666819

23 AUG 1988

Mr. Edward LaFuente
Hughes Aircraft Company
P.O. Box 2999
Torrance, California 90509

Dear Mr. LaFuente:

On April 5, 1988, an investigation was conducted at Hughes Aircraft Company located at 3100 W. Lomita Blvd., Torrance, California, by a representative(s) of the California Department of Health Services on behalf of the U.S. Environmental Protection Agency (EPA). A copy of the inspection report is enclosed. In the course of this investigation, information was gathered in accordance with Section 3007 of the Resource Conservation and Recovery Act, as amended (RCRA). Jacobs Engineering Group Inc., an EPA contractor, is assisting EPA in the preparation of and follow-up on this warning letter.

The following deficiencies were observed during the records review and facility inspection:

1. 40 CFR Section 268.7(a)

   The facility has not adequately characterized its wastes (specifically waste paint filters and plating shop sludge) to determine whether these wastes are restricted from land disposal.

2. 40 CFR Section 268.50(a)(2)(ii)

   The underground storage tank in use at the facility for storage of F-solvent wastes is not managed according to the requirements of this section. Both the contents and the length of time a given volume of waste is in storage must be identified for this tank.

You are hereby requested to submit a written report within thirty (30) days of receipt of this letter certifying that compliance with respect to the above deficiencies has been achieved. Please include the following information in your response:

1. Waste characterization data (analysis, product information or published "knowledge of process" information) for waste paint filters and waste plating shop sludge, with specific reference to restricted waste constituents.

2. A statement that, effective upon receipt of this letter, the facility will adopt the following management practices for any tanks used to store restricted wastes:

   - o Identify the contents of the tank(s) in writing.
   - o Identify in writing the volume of waste put in or taken from the tank(s) whenever either activity occurs.

Failure to achieve full compliance with the deficiencies cited in this letter within the thirty (30) day period may result in an enforcement action by EPA under Section 3008 of RCRA. You would be subject to liability for the imposition of penalties of up to twenty-five thousand dollars ($25,000) for each day of non-compliance in accordance with Section 3008 of RCRA.

EPA routinely provides copies of inspection reports to requestors under the Freedom of Information Act. Such releases will be handled according to the basic rules governing business confidentiality claims contained in 40 CFR Part 2. Any claim of confidentiality should be made within fifteen (15) working days from the receipt of this letter. EPA will construe a failure to furnish timely comments as a waiver of the confidentiality claim.

Your response should be addressed to Marta Williams, Jacobs Engineering Group Inc., 2530 Arnold Drive, Martinez, California 94553.

If you have any questions or require additional information, please contact Marta Williams at (415) 228-9700.

Sincerely,

Original Signed by:

Karen Schwinn, Chief
Waste Compliance Branch

KS:br

Enclosures

cc: John Adams, SWRCB
Robert Ghirelli, RWQCB - Los Angeles Region
Paul Blais, DHS - HQ
Ted Rauh, DHS-Los Angeles

bc: Elaine Schimmel, T-2-4
Gary Lance, T-2-4
Marta Williams, Jacobs Engineering Group Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

JAN 15 1993

Re: Hughes Aircraft Company
Torrance, California
CAD 041 666 819

Mr. Mohinder Sandhu
Chief, Permitting Branch
Cal EPA DTSC - Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802

Dear Mohinder:

Per our recent telephone conversation, I understand that your staff will be incorporating corrective action into the closure process for the Hughes Aircraft Company site in Torrance, California. I agree that it is more efficient for your agency to oversee corrective action at this site, since you are already involved in the closure process. Therefore, EPA defers oversight to your office and will not take action against the facility at this time. EPA is pleased that DTSC is willing to expand its efforts to promptly address the soil and ground water contamination at this high priority site.

Based on EPA's review of the site, there are three units at the facility (Former 3000 Gallon Waste Solvent UST, Former 500 Gallon Waste Solvent UST, and Former 500 Gallon Diesel UST) which represent potential or documented releases to the environment. In addition, two other units (Cooling Water Extraction/ Reinjection Wells and Former 10,000 Gallon Unleaded Gasoline UST) should be briefly assessed for the possibility of future releases or problems. The following paragraphs detail EPA's concerns with each of the units at the site.

Former 3000 Gallon Waste Solvent UST: This former steel tank was installed in 1967 and removed in 1983. It was used for storage of various waste solvents including acetone, methanol, PCE, and TCE prior to offsite disposal. Upon removal, a 1/4" hole on the tank bottom and evidence of spillage and/or leakage around the fill port were observed. This leaky tank has clearly caused significant soil and ground water contamination. Concentrations of PCE and TCE in soil are documented from the former excavation itself and extending all the way down to the water table. As a result, a significant plume of ground water contamination emanates from this source and extends downgradient at least

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several hundred feet. At least four constituents in this plume are present at levels exceeding California MCLs. I refer you to the various site investigation reports prepared by Hughes for the RWQCB for further details.

Interim remediation of this plume should begin immediately, perhaps by pumping ground water from MW-2, treating it onsite, and using it for facility cooling water as suggested by Hughes' consultant. This can be carried out concurrently with the additional "plume chasing" and characterization that will be needed. In addition, remediation of the subsurface soils (probably via vapor extraction) should begin immediately to remove this source of GW contamination. This will be both a difficult and probably incomplete remedy as these soils lie under a building.

Former 500 Gallon Waste Solvent UST: This steel UST was installed in 1974 and removed in 1983. It was used for the same purpose as the Former 3,000 Gallon Waste Solvent UST. Fortunately, during its removal, it appeared intact, passed a hydrostatic test, and displayed no evidence of leakage. Although there were no signs of contamination in the excavation, it appears that no confirmatory soil samples were taken at the time. A later soil boring documented clean soils down to 30 feet, where moderate levels of PCE and MeCl were encountered. Although there is insufficient data to be sure, this contamination may be due to the above mentioned 3,000 gallon UST (200 feet away) via soil gas migration or another subsurface transport mechanism. This area and the area between the two tanks should be more thoroughly investigated during the RFI to confirm or deny this hypothesis.

Former 500 Gallon Diesel UST: This former steel tank was installed in 1967 and removed in 1985. It is a documented source of soil contamination. Some contaminated soils were removed during the tank removal, but later borings indicated that some contaminated soils remain at depths very near or at the water table. Therefore, this unit may soon begin to contribute to the ground water plume, if it is not already doing so. This area should be further investigated during the RFI to determine its potential for contributing to the plume, with provisions for interim measures in the future, as appropriate.

Cooling Water Extraction/Reinjection Wells: These three deep wells do not appear to pose a direct threat to the environment since there is no evidence of contamination. However, they could serve as conduits for cross-contamination of the deeper aquifers in the future (especially the extraction well near MW-1), if contaminants were to migrate toward these wells. Any of these wells which are no longer of use or present a danger of cross-contamination should be properly closed and decommissioned as soon as possible.

Former 10,000 Gallon Unleaded Gasoline UST: This steel UST was installed in 1979 and closed in 1986. EPA's files do not indicate whether it was abandoned in place or removed. Since the

monitoring well directly next to this tank shows no contamination and it was only used for seven years, this tank does not appear to be a significant problem. However, the actual fate of this unit should be ascertained. Perhaps DTSC or RWQCB files contain more information regarding this unit.

In summary, EPA recommends the following general scope of corrective action activities:

1) Initiate interim measures for both the ground water plume and the subsurface soils at the Former 3000 Gallon Waste Solvent UST.

2) Conduct RFI/CMS program (or equivalent) for long-term remedies (as appropriate) addressing the entire site including the concerns outlined for each of the above five units and any other concerns that may arise. I believe that the amount of site characterization conducted to date is roughly equivalent to a Phase 1 RFI. Therefore, I recommend that the facility proceed directly into a Phase 2 RFI after interim measures have been undertaken.

I understand that these expanded corrective action activities will be incorporated into your annual workplan. I have enclosed a copy of the draft RCRA §3008(h) Consent Order and attached scopes of work and other background documents prepared by my staff prior to our discussion. These enclosures may be useful as background material for your staff overseeing corrective action activities. If you have any questions, please contact me or have your staff contact Frank Gardner of my staff at (415) 744-2039.

Sincerely,

Karen Schwinn
Chief, Waste Compliance Branch

Enclosures

cc: Greg Czajkowski - USEPA Region 9, Waste Compliance Branch
Greg Lind - USEPA Region 9, Office of Regional Counsel

SYMBOL	H-4-4	H-4-4	H-4			
SURNAME	[illegible]	Reach for AB	[illegible]			
DATE	1/15/93	1/15/93	1/15/93			

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

FILED

FEB 22 1993

ENVIRONMENTAL PROTECTION AGENCY
REGION IX
HEARING CLERK

In the Matter of	:	
	:	
HUGHES AIRCRAFT COMPANY	:	Docket No. RCRA-09-92-0012
	:	
	:	
	:	Judge Greene
Respondent	:	
	:	
	:	
	:	

ORDER GRANTING MOTION
FOR LEAVE TO WITHDRAW THE COMPLAINT

Pursuant to joint motion of the parties, and good cause having been shown, it is hereby ORDERED that leave to withdraw the complaint is hereby GRANTED. Accordingly, this matter is hereby dismissed without prejudice.

J. F. Greene
Administrative Law Judge

Washington, D. C.
February 17, 1993

CAD 041666819

CERTIFICATE OF SERVICE

I hereby certify that the original of this Order was sent to the Regional Hearing Clerk and copies were sent to the counsel for the complainant and counsel for the respondent on **February 18, 1993.**

Shirley Smith
Shirley Smith
Legal Staff Assistant
for Judge J. F. Greene

NAME OF RESPONDENT: Hughes Aircraft Company
DOCKET NUMBER: RCRA-09-92-0012

Mr. Steven Armsey
Regional Hearing Clerk
Region IX - EPA
75 Hawthorne Street
San Francisco, CA 94105-3901

Gregory B. Lind, Esq.
Office of Regional Counsel
Region IX - EPA
75 Hawthorne Street
San Francisco, CA 94105-3901

Joseph M. Polito, Esq.
Honigham, Miller, Schwartz
and Cohn
2290 First National Bldg.
Detroit, Michigan 48226

Gary Rafferty
Hughes Aircraft Company
Building CO1/MS A114
7200 Hughes Terrace
los Angeles, CA 90045

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

JAN 15 1993

Re: Hughes Aircraft Company
Torrance, California
CAD 041 666 819

Mr. Mohinder Sandhu
Chief, Permitting Branch
Cal EPA DTSC - Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802

Dear Mohinder:

Per our recent telephone conversation, I understand that your staff will be incorporating corrective action into the closure process for the Hughes Aircraft Company site in Torrance, California. I agree that it is more efficient for your agency to oversee corrective action at this site, since you are already involved in the closure process. Therefore, EPA defers oversight to your office and will not take action against the facility at this time. EPA is pleased that DTSC is willing to expand its efforts to promptly address the soil and ground water contamination at this high priority site.

Based on EPA's review of the site, there are three units at the facility (Former 3000 Gallon Waste Solvent UST, Former 500 Gallon Waste Solvent UST, and Former 500 Gallon Diesel UST) which represent potential or documented releases to the environment. In addition, two other units (Cooling Water Extraction/ Reinjection Wells and Former 10,000 Gallon Unleaded Gasoline UST) should be briefly assessed for the possibility of future releases or problems. The following paragraphs detail EPA's concerns with each of the units at the site.

Former 3000 Gallon Waste Solvent UST: This former steel tank was installed in 1967 and removed in 1983. It was used for storage of various waste solvents including acetone, methanol, PCE, and TCE prior to offsite disposal. Upon removal, a 1/4" hole on the tank bottom and evidence of spillage and/or leakage around the fill port were observed. This leaky tank has clearly caused significant soil and ground water contamination. Concentrations of PCE and TCE in soil are documented from the former excavation itself and extending all the way down to the water table. As a result, a significant plume of ground water contamination emanates from this source and extends downgradient at least

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several hundred feet. At least four constituents in this plume are present at levels exceeding California MCLs. I refer you to the various site investigation reports prepared by Hughes for the RWQCB for further details.

Interim remediation of this plume should begin immediately, perhaps by pumping ground water from MW-2, treating it onsite, and using it for facility cooling water as suggested by Hughes' consultant. This can be carried out concurrently with the additional "plume chasing" and characterization that will be needed. In addition, remediation of the subsurface soils (probably via vapor extraction) should begin immediately to remove this source of GW contamination. This will be both a difficult and probably incomplete remedy as these soils lie under a building.

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monitoring well directly next to this tank shows no contamination and it was only used for seven years, this tank does not appear to be a significant problem. However, the actual fate of this unit should be ascertained. Perhaps DTSC or RWQCB files contain more information regarding this unit.

In summary, EPA recommends the following general scope of corrective action activities:

1) Initiate interim measures for both the ground water plume and the subsurface soils at the Former 3000 Gallon Waste Solvent UST.

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I understand that these expanded corrective action activities will be incorporated into your annual workplan. I have enclosed a copy of the draft RCRA §3008(h) Consent Order and attached scopes of work and other background documents prepared by my staff prior to our discussion. These enclosures may be useful as background material for your staff overseeing corrective action activities. If you have any questions, please contact me or have your staff contact Frank Gardner of my staff at (415) 744-2039.

Sincerely,

Karen Schwinn

Karen Schwinn
Chief, Waste Compliance Branch

Enclosures

cc: Greg Czajkowski - USEPA Region 9, Waste Compliance Branch
Greg Lind - USEPA Region 9, Office of Regional Counsel

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STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

June 24, 1994

Dr. Michael H. Yalch
Business Manager
Hughes Aircraft - Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, California 90509-2999

Dear Dr. Yalch:

HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION (EPA ID NO. CAD041666819). RFI EQUIVALENCY DETERMINATION.

The Department of Toxic Substances Control (Department) has provided guidance for investigation of groundwater contamination at your facility beginning January 1993. The involvement has included review of several workplans and reports that characterize both soil and groundwater contamination, as well as several joint meetings in which the ongoing work was discussed. The details of the workplans and reports submitted and reviewed, and a summary of each of three meetings held are described in the Attachment. The Department has determined that the work performed and results presented in the above mentioned reports are equivalent to the RFI portion of Corrective Action, and that Hughes will not be required to perform an RFI as part of the Corrective Action Consent Agreement currently under negotiation.

If you have any questions, you should contact either myself at (310) 590-4880 or Ms. Christine P. Brown of my staff at (310) 590-4879.

Sincerely,

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

Attachment

cc: Mr. Nhan Bao
Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

recycled paper

cc: Mr. Tomas Torres
U. S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

Dr. James Lents
Executive Officer
South Coast Air Quality Management District
21865 East Copely Drive
Diamond Bar, California 91765

Mr. Robert Ghirelli
Executive Officer
Regional Quality Control Board
101 Centre Plaza Drive
Monterey Park, California 91754

Ms. Periann Wood
Compliance Section
Hazardous Waste Management Division (H-4-3)
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Chief Ann Psuda
Los Angeles County Fire Department
Health and Hazardous Materials Division
5825 Rickenbacker
Commerce, California 90040

Attachment

Summary of RFI Equivalent Activities
for RCRA Corrective Action
Hughes Aircraft Company - Electron Dynamics Division

The following activity is considered as equivalent to the RFI workplan submittal and review:

Submittal of the following workplans:

1) Soil and Groundwater Assessment Workplan, Hargis & Associates, January 30, 1991
2) Revised Soil and Groundwater Assessment Workplan, Hargis & Associates, April 24, 1991

These workplans were reviewed by Allen Winans, Associate Engineering Geologist of the Department and the findings are described in a memo dated 2/26/93 to Aaron Yue of the Facility Permitting Branch. These findings were discussed at the meeting of July 1, 1993 with the facility. The work plan with the conditions of the February 26, 1993 memo is considered as approved.

The following activity is considered as equivalent to RFI oversight:

1. Meeting held March 31, 1993 between Hughes and the Department. Discussed status of groundwater monitoring activities to date and proposed Hydropunch sampling to characterize the extent of the plume of contaminants.

2. Meeting held July 1, 1993 between Hughes and the Department. Discussed results of the first four Hydropunch locations and plume of contaminants that appeared to have migrated off site and the findings on the work plan prepared by Allen Winans by memo of 2/26/93. Discussed need for five additional Hydropunch locations.

3. Meeting held November 2, 1993 between Hughes and the Department. Discussed results of the five additional Hydropunch locations. Results indicated that there were three plumes of three different halogenated solvents, out of which only one plume of trichloroethylene appeared to originate from the Hughes site. The other two plumes appeared to originate from off site sources. Three more monitoring wells were proposed to further characterize the lateral extent of contamination. A fourth deep well to characterize the vertical extent of contamination was also proposed. A core sample was proposed to be taken to confirm the base of the Gage aquifer at 200 to 220 feet bls (below land surface). The proposed wells were constructed and the

results from this investigation were summarized in the report titled Supplemental Hydrogeologic Assessment Report, Hargis & Associates, February 18, 1994.

The following activity is considered as equivalent to the submission and review of the RFI Report:

Submittal of the following reports:

1) Groundwater Assessment, Hargis & Associates, October 25, 1991,
2) Quarterly Groundwater Monitoring Report, March 1992, Hargis & Associates, April 14, 1992,
3) Transmittal of Interim Field Data and Initial Groundwater Analytical Results, Hargis & Associates, July 17, 1992,
4) Supplemental Hydrogeologic Assessment Report, Hargis & Associates, February 18, 1994.

These reports were also reviewed by Allen Winans and his findings were reported in the memo referenced above and in a later memo dated 3/7/94 to Christine Brown of the Facility Permitting Branch. The reports and Allen Winans' comments are considered as equivalent to submittal and review of the RFI Report.

OF CALIFORNIA — ENVIRONMENTAL PROTEC AGENCY PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

March 12, 1993

Mr. William Heidtman, Manager
Health and Safety and Environmental Affairs
Hughes Aircraft Company
3100 West Lomita Boulevard
Torrance, California 90509
EPA ID # 041666819

Dear Mr. Heidtman:

REPORT OF VIOLATION

On January 25, 1993, representatives of the Department of Toxic Substances Control (DTSC) inspected Hughes Aircraft Company (Hughes) located at 3100 West Lomita Boulevard, Torrance, California.

As a result of that inspection, violaions of hazardous waste statutes and regulations were identified.

Specified violations and a required schedule of compliance are listed below. Failure to correct the identified violations within the schedule provided will result in DTSC citing you for continuing/additional violations.

I. VIOLATIONS

1. Title 22, California Code of Regulations, (Cal. Code Regs.), Section 66265.173 (a).

   Hughes violated Title 22, Cal. Code Regs., Section 66265.173 (a), in that on or about January 25, 1993, Hughes failed to close the lids of three containers, containing hazardous waste, when no hazardous waste was being added or removed.

   Inspectors observed one 30-gallon drum and two 2-gallon cardboard boxes in room 1738 of building 230, that were left open.

recycled paper

2. Title 22, Cal. Code Regs., Section 66262.34 (f) (3).

   Hughes violated Title 22, Cal. Code Regs., Section 66262.34 (f) (3), in that on or about January 25, 1993, Hughes failed to label or mark clearly with the words, "Hazardous Waste", two 55-gallon drums containing hazardous waste in room 1738 of building 230

3. Health and Safety Code (HSC), Section 25201 and Title 22, Cal. Code Regs., Section 66262.34 (c).

   Hughes violated HSC, Section 25201 and Title 22, Cal. Code Regs., Section 66262.34 (c), in that on or about January 25, 1993, Hughes stored hazardous waste longer than 90 days at an unauthorized area.

   Hughes stored more than 55 gallons of hazardous waste at or near the point of generation in rooms 1732 and 1738 of building 230 for more than 90 days.

4. Title 22, Cal. Code Regs., Sections 66262.34 (a) (3), 66265.16 (a) (3), and 66265.74 (a).

   Hughes violated Title 22, Cal. Code Regs., Sections 66262.34 (a) (3), 66265.16 (a) (3), and 66265.74 (a), in that on or about January 25, 1993, Hughes failed to provide contingency plan and emergency response trainings to personnel who handle and manage hazardous waste. Hughes also failed to produce the training records for inspection when requested.

   Training records for Mr. John Wheeler were not produced when requested.

II. SCHEDULE OF COMPLIANCE

Correct these violations upon receipt of this Report. Please send written certification to this office within fifteen (15) days of receipt of this Report that the above violations have been corrected.

DTSC may conduct a reinspection of Hughes Aircraft Company located at 3100 West Lomita Boulevard, Torrance, California, to verify compliance.

The issuance of this Report of Violation and Schedule of Compliance does not preclude DTSC from taking further enforcement actions as a result of the violations herein.

If you have any questions regarding this Report, please contact Mr. Ahmed Hegab at (310) 590-4934.

Sincerely,

Carmelita E. Lampino

Carmelita E. Lampino
Unit Chief
Surveillance and Enforcement Branch

cc: Mr. James Cutright
Assistant Chief Counsel
Toxics Legal Office
P.O. Box 806
Sacramento, California 95812-0806

Mr. Tim Sullivan
Regional Coordinator
U.S. Environmental Protection agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Certified Mail
P 048 523 685
Return Receipt Requested

STATE OF CALIFORNIA - ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
REGION 4
245 WEST BROADWAY, SUITE 350
LONG BEACH, CA 90802
(310) 590-4868

November 21, 1991

Mr. Michael H. Yalch, Ph.D.
Facilities Business Manager
Hughes Aircraft Company
Electron Dynamics Division
P.O. Box 2999
Torrance, California 90509-2999

Dear Mr. Yalch:

PART A APPLICATION: HUGHES AIRCRAFT COMPANY, 3100 WEST LOMITA BOULEVARD, TORRANCE, CALIFORNIA (EPA ID NO. CAD041666819)

This is in response to the revised Part A Application you submitted to us during the April 8, 1991 meeting between representatives of Hughes Aircraft Company - Electron Dynamics Division (Hughes) and the Department of Toxic Substances Control (Department). The revised Part A was submitted to reflect expansion of your hazardous waste operations at the facility.

The Department rejects your revised Part A Application (application) since the landowner's signature is missing. Title 40, Code of Federal Regulations, Subpart 270.10(b) and Title 22, California Code of Regulations, Subpart 66270.10(b) requires the landowner to sign the permit application.

Our records indicate that the Department did not complete its permit determination on your permit application dated, May 30, 1986 because the application was not certified by the landowner. During the April 8, 1991 meeting and subsequent conversations with you, it was stressed that you should determine whether you plan to pursue with your permit application and operate the facility as permitted or operate it under generator status by withdrawing your permit application. To this date, we have not received your response to this request.

You are now directed by this letter to notify us by December 10, 1991 of your decision on whether you plan to pursue with your permit application or withdraw the application to obtain a generator status.

Should you decide to operate the facility as permitted, the 1986 permit application is inadequate to comply with the current regulations, policies and performance standards. You will be required to submit a revised permit application. In order to prepare a permit application, we have developed guidance documents. These guidance documents and instructions for submitting a permit application will be made available to you at your request.

In accordance with Section 25205.7 of the Health and Safety Code, you are also required to pay a facility permit application fee with the permit application. This fee is non-refundable, even if the permit request is withdrawn or the permit is denied. The check for your application fee should be made payable to the State Board of Equalization.

If you have any questions, please contact Mr. Steven Ross of my staff at (310) 590-4894.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

cc: Mr. Lester Kaufman, Chief
Permits Section
Hazardous Waste Management Division (H-3-2)
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

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STATE OF CALIFORNIA - ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
REGION 4
245 WEST BROADWAY, SUITE 350
LONG BEACH, CA 90802
(310) 590-4868

November 21, 1991

Mr. Michael H. Yalch, Ph.D.
Facilities Business Manager
Hughes Aircraft Company
Electron Dynamics Division
P.O. Box 2999
Torrance, California 90509-2999

Dear Mr. Yalch:

PART A APPLICATION: HUGHES AIRCRAFT COMPANY, 3100 WEST LOMITA BOULEVARD, TORRANCE, CALIFORNIA (EPA ID NO. CAD041666819)

This is in response to the revised Part A Application you submitted to us during the April 8, 1991 meeting between representatives of Hughes Aircraft Company - Electron Dynamics Division (Hughes) and the Department of Toxic Substances Control (Department). The revised Part A was submitted to reflect expansion of your hazardous waste operations at the facility.

The Department rejects your revised Part A Application (application) since the landowner's signature is missing. Title 40, Code of Federal Regulations, Subpart 270.10(b) and Title 22, California Code of Regulations, Subpart 66270.10(b) requires the landowner to sign the permit application.

Our records indicate that the Department did not complete its permit determination on your permit application dated, May 30, 1986 because the application was not certified by the landowner. During the April 8, 1991 meeting and subsequent conversations with you, it was stressed that you should determine whether you plan to pursue with your permit application and operate the facility as permitted or operate it under generator status by withdrawing your permit application. To this date, we have not received your response to this request.

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Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

cc: Mr. Lester Kaufman, Chief
Permits Section
Hazardous Waste Management Division (H-3-2)
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

HUGHES
ELECTRON DYNAMICS DIVISION
Industrial Electronics Group

December 19, 1991

Department of Toxic
Substance Control
Region 4
245 West Broadway Suite 350
Long Beach, CA 90802

ATTENTION: Mr. Anand Rege

RECEIVED
1991 DEC 20 AM 10:31
LONG BEACH

Dear Mr. Rege:

In response to your letter of November 21, 1991, it is our intent to withdraw our permit application and to obtain a generator status. This is a reiteration of our position as stated in my letter to you on June 14, 1991. We are continuing to pursue a water recycling exemption for our Wastewater Treatment Plant under Section 25143.2 of the CHSC. This process has taken several months longer than anticipated. However, we have received a letter of concurrence and conditional approval for this exemption from Kim Wilhelm of the Alternative Technology Division of the California EPA/DTSC in Sacramento. A copy was sent to your office, and I have attached one hereto for your reference. The conditions posed in that letter are currently being addressed with the AQMD and the County Sanitation District.

In the June 14th letter, I had indicated a November 1991 timeframe for a closure plan covering our vaulted solvent tank, drum storage yard and Wastewater Treatment Plant. In light of the delays in obtaining our exemption, a more realistic date will be in April of 1992. As had been requested in my previous letter, we would appreciate your sending us a set of closure guidance documents.

We are presently appropriating funding for the Water Recycling Project, and are having working drawings prepared for construction. It is our intent to begin construction in the first quarter of 1992, and be complete and ready for operation by the end of the second quarter.

3100 West Lomita Boulevard, P.O. Box 2999, Torrance, CA 90509-2999
(213) 517-6000

If you have any further questions or comments regarding our current plans or activities, please contact me at your convenience at 310-517-6475.

Very truly yours,

HUGHES AIRCRAFT COMPANY
ELECTRON DYNAMICS DIVISION

Michael Yalch

Mr. Michael H. Yalch, Ph. D.
Facilities Business Manager

MHY/ps
Attachments

cc: Jim Cain
Erling Illokken
Bill Heidtman
Paul Mahlow

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY
PETE WILSON, Governor
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
400 P Street, 4th Floor
P.O. Box 806
Sacramento, CA 95812-0806
(916) 322-3670

October 25, 1991

David J. Leu, Ph.D.
Mittelhauser Corporation
23272 Mill Creek Drive, Suite 300
Laguna Hills, California 92653

Dear Dr. Leu:

RECYCLING OF WASTEWATER TREATMENT PLANT EFFLUENT AT HUGHES AIRCRAFT, TORRANCE, CALIFORNIA

In your letter you requested the California Department of Toxic Substances Control's (DTSC) determination whether the onsite use of wastewater treatment-plant effluent as "makeup water" for cooling towers exempts from hazardous waste facility permit requirements (among others) the plant that generated it. You provided the following information (paraphrased here) in support of your request.

- Hughes Aircraft Company (HAC) generates spent plating baths and rinse waters from unstated operations at its Torrance, California facility.

- HAC operates a plant that treats the spent plating baths and rinse waters onsite using pH adjustment and heavy-metals precipitation (sodium hydroxide and flocculant addition, respectively).

- HAC's wastewater treatment plant produces an average of approximately 54,000 gallons of effluent per operating day.

- HAC's cooling towers are part of HAC's "facility chiller systems" which use water to provide industrial process and space cooling. To control increases in dissolved solids due to evaporation from the cooling towers, a portion of the water used in the towers must be continuously "blown down" to the plant sewer. In addition a very small quantity of the water is lost from the tower due to drift of small droplets blown by tower fans and/or the wind. Thus, water is lost from the towers by evaporation, blowdown, and drift, and must be replaced with "makeup water."

- HAC presently uses municipal fresh water as makeup water, but proposes to use an average of approximately 40 percent or more of the wastewater treatment-plant effluent to replace an unstated portion of the fresh water, resulting in

a savings of approximately six million gallons of fresh water annually.

- HAC believes that the proposed recycling process qualifies for a hazardous waste facility permit exemption pursuant to Section 25143.2(c)(2), Health and Safety Code (HSC).

- HAC might segregate and independently dispose of all RCRA hazardous wastes (e.g., acid plating solutions) presently treated in the wastewater treatment plant. If so, only non-RCRA hazardous wastes would be treated there. You or HAC essentially believe that under this circumstance, the wastes treated in the wastewater treatment plant would be excluded from classification as DTSC-regulated hazardous wastes, pursuant to Section 25143.2(d)(1), HSC.

Based on the above information, the DTSC has concluded the following:

- HAC's wastewater treatment plant presumably receives RCRA hazardous waste but is exempt from federal hazardous waste facility permit requirements pursuant to Section 264.1(g)(6), Title 40, Code of Federal Regulations (CFR) as a "wastewater treatment unit" (Section 260.10, CFR). (If not, Section 262.34, CFR, as interpreted by the U.S. Environmental Protection Agency (USEPA) in Federal Register 51(56): 10168 (March 24, 1986), might also apply.) In any case, DTSC assumes that you or HAC have already verified with USEPA whether HAC's wastewater treatment plant is subject to federal permit requirements. For purposes of the following paragraphs, DTSC assumes that the plant is exempt from those federal requirements.

- The DTSC believes that HAC is proposing to recycle a substantial quantity (i.e., 40 percent or greater) of HAC's wastewater, which is derived from RCRA hazardous wastes at least in part, and to use it onsite as cooling tower makeup water. Thus, DTSC concurs that HAC's wastewater treatment plant qualifies for the federally equivalent exemption from DTSC's hazardous waste facility permit requirements pursuant to Section 25143.2 (c)(2), HSC, provided that all of the following conditions apply:

  - The provisions of the exemption are fulfilled;
  - The recordkeeping and related requirements of Sections 25143.2(f) and 25143.9, HSC (if applicable) are met;

- None of the exclusions in Section 25143.2(e), HSC, supersede; and
- No hazardous component of the wastewater is volatilized.

- The DTSC believes that if HAC segregates and separately disposes of all RCRA hazardous wastes (e.g., acid plating solutions) presently treated in the wastewater treatment plant and manages the non-RCRA hazardous wastes and the effluents derived from them as described in the preceding paragraph, then the non-RCRA hazardous wastes would (as you concluded) be excluded from classification as wastes pursuant to Section 25143.2(d)(1), HSC, provided that all of the conditions set forth in the preceding paragraph [and marked with a (*)] apply.

- You did not mention whether the wastewater treatment plant effluent would itself be hazardous when tested pursuant to applicable federal and/or state requirements (regardless whether the effluent is derived from RCRA and/or non-RCRA hazardous wastes). If the effluent is hazardous, then the DTSC must caution HAC to be sure to be able to document in detail that the effluent is being legitimately recycled and used onsite, and is not simply being diluted with municipal fresh water (if excess municipal fresh water is used) in the cooling tower in order to meet local sewerage agency requirements prior to discharge of the effluent to the sewer as cooling tower blowdown.

- You did not mention whether the wastewater treatment plant produces a sludge, whether the sludge is hazardous, and if it is hazardous, how it is managed. HAC must address this issue appropriately.

- You did not address the potential issues of: concentration of the hazardous constituents in the effluent (even if initially present at nonhazardous concentrations) when used in the cooling tower due to evaporation of the water (DTSC realizes that this is the reverse of the dilution issue raised above, but that this is also possible if excess effluent is used); augmentation of the concentrations of hazardous constituents in the effluent (even if initially present at nonhazardous concentrations) if the municipal fresh water also contains those constituents (albeit at presumably nonhazardous concentrations initially); and disposal of hazardous constituents to the environment from the cooling towers via drift (organics and inorganics?)

and/or evaporation (organics?). HAC must address these potential issues and their consequences, as applicable.

- You did not identify explicitly the hazardous constituents present in the wastes being treated in the wastewater treatment plant or their whereabouts after treatment (in the effluent, sludge, other?) Such information is obviously basic to addressing the issues cited in the preceding paragraphs.

- You did not identify the manner(s) in which the RCRA hazardous wastes would be managed if HAC chooses to segregate them from the wastes treated in the wastewater treatment plant. The wastes must, of course, be managed in accordance with applicable federal and state hazardous waste control laws.

In summary, although your letter did not address several relevant issues identified above, DTSC concurs that HAC's Torrance wastewater treatment plant is either conditionally exempt from DTSC's hazardous waste facility permit requirements under Section 25143.2(c)(2), HSC or is conditionally excluded from DTSC regulation under Section 25143.2(d)(1), HSC (as specified above), depending on whether the subject plant treats RCRA or non-RCRA hazardous wastes, respectively. However, please be advised that DTSC is reviewing those sections of law to determine whether there is a need to exempt or exclude operations such as HAC's that are more like hazardous waste treatment than recycling operations.

If you have questions regarding this letter, please contact me at (916) 322-5347.

Sincerely,

Kim Wilhelm
Alternative Technology Division

cc: Region 4/Long Beach
Department of Toxic Substances Control
245 West Broadway, Suite 350
Long Beach, California 90802

KW:ZM:ks

STATE OF CALIFORNIA
PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

January 8, 1992

Dr. Michael Yalch
Hughes Aircraft Company,
Electron Dynamics Division
P.O. Box 2999
Torrance, CA 90509-2999

GROUND WATER ASSESSMENT AT HUGHES AIRCRAFT COMPANY (ID# 905050016), 3100 WEST LOMITA, TORRANCE, CA 90505

We have reviewed your ground water assessment report dated October 25, 1991 for the subject site. Based on our review, we have no objections to you implementing the proposed ground water investigation as specified in the work plan provided the following conditions are met:

(1) All work shall be completed as proposed.

(2) Well permits must be obtained from Los Angeles County Department of Health Services for all proposed ground water monitoring wells prior to drilling.

(3) The construction, installation, and development of the ground water monitoring wells shall conform to Title 23 California Code of Regulations, Chapter 16, Section 2649.

(4) After the installation of the ground water monitoring wells, they shall be surveyed into a benchmark of known elevation by a licensed surveyor.

In addition, we are granting conditional approval to proceed with the development of a detailed remedial work plan for the interim treatment of ground water. The detailed remedial work plan shall include, as a minimum, the following:

(5) Baseline water quality data for all ground water monitoring wells, including proposed wells, before cleanup begins.

(6) A detailed description of the ground water treatment system with a flow diagram. This should address, as a minimum, a step by step description of the following items:

(a) An operating schedule for the ground water extraction system and its zone of influence.

(b) A ground water monitoring plan to verify that the proposed ground water extraction system will contain the plume and prevent further migration.

(c) A detailed layout plan and equipment specification.

(d) A ground water monitoring program to evaluate the effectiveness of the treatment system.

Furthermore, you must obtain the required permits from the appropriate agencies for the proposed ground water treatment operations and discharge to the sewer by way of the cooling towers. The detailed ground water remedial work plan, and the results from your proposed ground water investigation are due by March 13, 1992. In addition, this is to advise you that the proposed cleanup of the ground water will be subject to Waste Discharge Requirements (WDR) prescribed by this Regional Board. A WDR permit application (enclosed) shall be submitted to this Board prior to the commencement of the cleanup and reuse of treated ground water. If you have any questions, please contact Mr. Arthur Heath at (213) 266-7563 or me at (213) 266-7561.

Joshua M. Workman

JOSHUA M. WORKMAN
Senior Water Resource
Control Engineer

AGH/agh

cc: Ms. Peri Wood, Environmental Protection Agency, Region 9
Mr. John A. Hinton, P.E., Chief, Region 4 (Long Beach)
Department of Health Services, Toxic Substance Control Division
Inspector Doug Bergen, City of Torrance Fire Department
Mr. Jim Weaver, Hughes Aircraft Company
Mr. Roger Niemeyer, Hargis + Associates, Inc.

Enclosures: WDR permit application

STATE OF CALIFORNIA - ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
REGION 4
245 WEST BROADWAY, SUITE 350
LONG BEACH, CA 90802
(213) 590-4868

PETE WILSON, Governor

January 27, 1992

Mr. Michael Yalch, Ph. D
Hughes Aircraft Company
Electron Dynamics Division
3100 West Lomita Boulevard
P.O. Box 2999
Torrance, California 90509-2999

Dear Dr. Yalch:

PART B PERMIT APPLICATION: HUGHES AIRCRAFT COMPANY - ELECTRON DYNAMICS DIVISION, TORRANCE FACILITY, (EPA ID NO. CAD041666819)

This will acknowledge your letter dated December 19, 1991, and subsequent telephone conversation dated January 8, 1992, notifying us of your intent to withdraw your Part B Permit Application and initiate closure activities. Hughes Aircraft Company - Electron Dynamics Division (Hughes) currently wishes to close the vaulted solvent tank and drum storage yard. Hughes intends to pursue a recycling exemption for the wastewater treatment plant.

The Wastewater Treatment Plant will continue to fall under interim status and you must continue to comply with all applicable laws and regulations for treatment in accordance with title 22, California Code of Regulations, Subpart 265 until one of the following has occurred:

1. The Alternative Technology Division (ATD) grants Hughes' request for a water recycling exemption for its Wastewater Treatment Plant.

2. Hughes' Wastewater Treatment Plant falls under the provisions of Permit by Rule (PBR) and Hughes complies with the notification requirements and all applicable requirements set forth by these regulations.

3. Hughes pursues a treatment permit or closes its Wastewater Treatment Plant in the event ATD rejects the water recycling exemption and the unit does not fall under the provisions of Permit by Rule.

To assist you in deciding whether the Wastewater Treatment Plan falls under PBR, we have enclosed the PBR fact sheet. Be advised that all existing facilities must submit by certified

mail an Initial Notification of intent to operate a fixed Treatment Unit (DTSC Form 8462) which falls under the criteria of permit by rule by February 1, 1992. Failure to submit the Initial Notification may be grounds for enforcement action.

Also, please find the enclosed documents to assist you in your preparation to write a complete closure plan. Once completed, send two copies of the closure plan with the completed closure plan checklist to the Department. Send an additional copy of the closure plan with the completed closure plan checklist to Mr. Lester Kaufman, Chief, Permits Section, Hazardous Waste Management Division (H-3-2), U. S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, California 94105.

Please send the aforementioned closure plans within 60 days of receipt of this letter. In addition to the closure plans, please transmit a copy of your Health & Safety Plan for Departmental review.

At this time, Hughes is required to comply with all applicable regulations for an interim status storage and treatment facility in accordance with Title 22, California Code of Regulations, and Title 40, Code of Regulations.

If you have any questions, please contact Mr. Steven Ross of my staff at (310) 590-4894.

Sincerely,

D. R. Rege

D. (Anand) R. Rege
Unit Chief
Facility Permitting Branch

Enclosures

RECORDS SEPARATOR PAGE

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

25 MAR 1991

CERTIFIED MAIL NO. P 347536487
RETURN RECEIPT REQUESTED

In Reply Refer to: H-4-3
EPA ID: CAD041666819

Jeffrey Grant, President
Hughes Aircraft Company
3100 West Lomita Boulevard
Torrance, CA 90509

Dear Sir:

In reviewing your file, it was noted that the Part A application for your facility, dated November 18, 1980, indicated a waste-chemical storage area that was located in the center of space between Building 230 and Building 231. It was also noted that a solvent tank was located in a fenced area between Building 230 and area "TLR".

The subsequent facility map dated October 16, 1990 indicates that the former waste-chemical storage area has been enlarged and moved to an area adjacent to the initial site. In addition, the solvent storage tank area has been built over and the current solvent tank appears in a new location between Buildings 232 and 231.

We are seeking information on the current operating and closure status of all storage areas where hazardous waste has been held for greater than 90 days or has been received from other facilities since 1980.

Under the provisions of 3007(a) of the Resource Conservation and Recovery Act (RCRA), the Administrator of the EPA may require persons subject to RCRA to furnish information necessary for EPA to administer the Act. Pursuant to the authority set forth in Section 3007(a) of RCRA you are requested to submit the following information:

1. The number, location, and dates of the establishment of all hazardous waste storage facilities, and copies of the permits to build these facilities since November, 1980.

PART A RATING SHEET

FACILITY NAME: HUGHES AIRCRAFT.

EPA I.D. #: CAD041666819 COUNTY: 037 SCORE: 035

PROCESS: S01 S02 --- --- --- --- ---

--- --- --- --- --- ---

SCORE = POINTS X WEIGHTING FACTOR 0 = Non Hazardous 99 = Imminent Hazard	WEIGHTING FACTOR	SCORE
AGE OF FACILITY (YEARS) 0 - 10 (1 pt.) 11 - 20 (2 pt.) 21 - 30 (3 pt.) over 30 (4 pt.)	1	2
PROCESS DESIGN CAPACITY (GAL.) 1 - 1k (1 pt.) 1k - 10k (2 pt.) 10k - 100k (3 pt.) 100k - 500k (4 pt.) over 500k (5 pt.)	2	6
PROCESS (pick worst case, add 1 point if any additional processes, then multiply by weighing factor) 5 pt. - landfill (D80) disposal in surface impoundments (D83) injection wells (D79) 4 pt. - treatment in surface impoundments (T02) storage in surface impoundments (S04) 1 + 3 pt. - land application (D81) underground tanks (S02) storage in piles (S03) 2 pt. - treatment in tanks or containers (T01) incineration (T03). NONE 1 pt. - storage in tanks or containers (S01, S02)	3	12
CHARACTER OF WASTE 1 pt. - hazardous (D,F,K,U) 2 pt. - D005 - D015, D017, U021, U043, U117, U133 - U135, U223, U232 3 pt. - acutely hazardous (P)	4	4
LOCATION OF FACILITY 1 pt. - rural 2 pt. - urban	1	2
BEST ENGINEERING JUDGEMENT lower hazard - - - - - - - - - - - - - higher hazard 1 2 3 4 5	3	9

RATIONALE FOR BEJ SCORE AND OTHER COMMENTS:

Facility has some underground sumps for storage of F003 & F005

TOTAL SCORE = 035

RATER: Susi Jackson

DATE: 5/27/81

Part A, Permit Process --- Internal Checklist

ID Number CAD041666819 Inst Name Hughes Aircraft Co.

ret 1/5

PHASE ONE

Refer to Form No:	Interim Regulatory Requirements	Indicate by your initials: Yes	No	Valid Prmlg Date?
1	T/S/D Facility? (If No, return to respondent.)	___	___	
3	Form 1 received?	___	___	
1	Form 3 received?	___	___	
1 & 3	Postmarked on or before November 19, 1980?	___	___	___
3	Date of operation entered?	___	X	Corrected
3	Date of operation on or before November 19, 1980?	___	___	___
Notif. record	Notifier?	___	___	
"	Notified on or before August 18, 1980?	___	___	
1	Form 1, XIII B signed?	___	___	multiple owner
3	Form 3, IX B Signed?	___		one owner changed certification

(If all ten items above are initialed in the Yes column, generate Interim Status Acknowledgement and indicate the trigger date here: pw)

returned 2/19

PHASE TWO pw

sent back w/out page + called - 3/19 will mail

1	Unsure if regulated or non-regulated?	___	___
3	New facility?	___	___

1 & 3 Core items missing? If Yes, indicate which items:

Facility name___; location___; mail address___; operator info___;

certification___; process info___; waste info___; owner___; sigs___.

limit of measure

PHASE THREE

1 & 3 Non-core items missing? If Yes, indicate which items:

Maps not topographical photos___; drawings___; lat/long___.

Other observations and comments: sic codes

Received Date Stamp

18 NOV 1980

(Stamp forms also)

Log out/Log in on reverse side.

RECORDS SEPARATOR PAGE

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HUGHES

INDUSTRIAL ELECTRONICS GROUP

VIA FEDERAL EXPRESS

May 2, 1991

Ms. Periann Wood
Hazardous Waste Division
United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Re: (H-4-3) Hughes Aircraft Company
3100 West Lomita Boulevard
Torrance, California 90509
EPA ID: CAD041666819

Dear Ms. Wood:

This letter is in response to Mr. Jeff Zelikson's March 25, 1991 letter to Mr. Jeffrey Grant, [Industrial Electronics Group] President, Hughes Aircraft Company ("HAC"), regarding the above matter. Mr. Zelikson's letter requested information about the HAC plant located at 3100 West Lomita Boulevard, Torrance, California 90509 (the "Torrance Plant") as described in the third unnumbered paragraph on page 1 of that letter and the two numbered paragraphs of that letter. This response uses the language of those two numbered paragraphs (as modified by the third unnumbered paragraph on page 1) as primary headings to organize this response.

1. The number, location, and dates of the establishment of all hazardous waste storage facilities where such waste has been held for greater than 90 days or has been received from other facilities, and copies of the permits to build these facilities since November, 1980.

P.O. Box 2999, Torrance, CA 90509-2999
(213) 517-6000

A. Description of the waste storage facilities located at the Torrance Plant:

(1) General:

The hazardous waste storage areas at the Torrance Plant discussed in this letter, with the exception of Yard #2 and the Current Yard, have not received hazardous waste from generators other than the Torrance Plant. Yard #2 and the Current Yard did receive hazardous waste from two non-contiguous HAC buildings during the approximate period of 1983 through 1986. Those non-contiguous HAC buildings are each about 800 feet from the Torrance Plant.

(2) Tank #1:

Tank #1, an underground waste solvent storage tank with a capacity of approximately 3,000 gallons, was installed in 1967. This tank was covered in the Part A Hazardous Waste Permit Application (the "1980 Part A Application") submitted under the Resource Conservation and Recovery Act of 1976 ("RCRA") as amended, 42 U.S.C. 6901 et seq., by HAC for the Torrance Plant and dated November 5, 1980. Copies of the 1980 Part Application and its preceding August 12, 1980 Preliminary Notification of Hazardous Waste Activities for the Torrance Plant which conferred interim status on the Torrance Plant under RCRA, are enclosed as Attachment "A". Storage tank capacity in the amount of 6,000 gallons is listed in Form 3, Paragraph III.B., of the 1980 Part A Application. The description of the other tank, in use at this time for hazardous waste storage, Tank #2, a 550 gallon underground storage tank, is described in Paragraph 1.A.(3) of this letter. Consequently, only 3,550 gallon combined capacity were in use at the time of the submission of the 1980 Part A Application. Based on presently available information, no explanation for the difference between the 3,550 gallon joint capacity for Tank #1 and Tank #2 and the 6,000 gallon amount can be given. The 6,000 gallon amount may simply have been a mistake. In this regard, we also note that the facility drawing appended to the 1980 Part A Application erroneously showed each of the capacities of Tank #1 and Tank #2 as 1,000 gallons.

As part of a new construction project, Tank #1 was removed from the ground during the early summer of 1983. After removal of Tank #1 in 1983, Building 232 was constructed at the Torrance Plant, in part, over the former location of Tank #1. The location of Tank #1 through the date of its removal is shown as "Former Tank #1" on the map of the Torrance Plant which is enclosed as Attachment "B".

In conjunction with the removal of Tank #1 and Tank #2 during 1983, Hargis & Montgomery, Inc. ("HMI") provided two reports and two letters dated June 15, 1983, August 29, 1983, June 27, 1983, and August 24, 1983, respectively, all of which are included in the enclosed documents as Attachments "C", "D", "E" and "F". These documents also address Tank #2. Additional soil samples were taken from soil removed along with Tank No. 1. The analyses of those samples by Manufacturing Process Laboratories ("MPL") are included in Attachment "H".

HMI also has provided to HAC a January 30, 1991 Soil and Groundwater Assessment Work Plan under which work has not yet been undertaken. It was submitted for review to the California Regional Water Quality Control Board ("CWQCB") as part of an assessment of a former leaking diesel fuel underground storage tank. That work plan is enclosed as Attachment "G". This plan has now been reviewed by the CWQCB and is being revised by HAC to address CWQCB's comments. The work to be done under the plan will include groundwater and soil sampling and analyses. Soil sampling will include the areas in which Tank #2 and the diesel fuel tank were located but the CWQCB will not, at this time, require soil sampling in the area of the former Tank #1.

The August 29, 1983 HMI report was inadvertently not made available to Ecology and Environment, Inc. ("E&E"), which inspected the Torrance Plant on behalf of the United States Environmental Protection Agency ("EPA") on or about May 7, 1990. The report was not referenced in the E&E report of that inspection dated August 10, 1990, a copy of which is not enclosed because EPA obviously has copies. HAC also has not been able to determine if the August 29, 1983 HMI report was submitted to the California Department of Health Services ("DHS") or the CWQCB. While this report may have been requested by either or both of these California agencies (and while we know of no federal requirement to submit this information to EPA), these agency files only contained a copy of the June 15, 1983 HMI report when recently reviewed by HAC. Subsequently, a copy of the August 29, 1983 HMI report was given to the CWQCB as a result of the interest of the CWQCB in the diesel fuel tank.

On or about January 15, 1982, DHS issued an "Interim Status Document" ("ISD") which covered the hazardous waste storage areas (including Tank #1) in operation at the time at the Torrance Plant.

(3) Tank #2:

Another underground waste solvent tank, Tank #2, with a capacity of approximately 550 gallons, was installed sometime during the 1974 - 1977 period. Tank #2 was also described in the 1980 Part A Application and was the second of the two tanks which were in use at the time of the submission of the 1980 Part A Application. Tank #2 was also removed during the early summer of 1983 as part of the new construction project. The location of Tank #2 through the date of its removal is shown as "Former Tank #2" on Attachment "B". Tank #2 was covered by the ISD.

(4) Storage Yard #1:

While the name, "Yard #1," has not traditionally been used at the Torrance Plant for this particular container storage area, that designation is used in this letter for ease of identification. Yard #1 was installed in approximately 1968, covered approximately 237 square feet in area, and was identified in the 1980 Part A Application as "Waste Chem Stor". The location of Yard #1 until the date of its removal in 1983 is shown as "Former Container Storage Yard #1" on Attachment B. Yard #1 and Yard #2, a container storage area discussed in paragraph 1.A.(5) of this letter, were identified in the 1980 Part A Application and were indicated to have a combined storage capacity of 9,600 gallons.

Yard #1 was removed and replaced in conjunction with the new construction project at the Torrance Plant in 1983. Yard #1 was also covered by the ISD.

(5) Storage Yard #2:

Again, while the "Yard #2" designation has not traditionally been used at the Torrance Plant for this container storage area, that designation is used in this letter for ease of identification. Yard #2 covered approximately 384 square feet in area and was installed in or about 1978 or earlier. Yard #2 was also included in the 1980 Part A Application as "Fenced Drum Waste Storage". The location of Yard #2 until the date of its removal in 1983 is shown as Former Container Storage Yard #2 on Attachment "B". Yard #2 was also removed and replaced in conjunction with the new construction project in 1983 and was also covered by the ISD.

(6) Current Waste Solvent Tank:

A replacement hazardous waste solvent tank (the "Current Tank") was installed in 1983 to partially replace Tanks #1 and #2. The location of the Current Tank is shown as

the "Current Solvent Tank" on Attachment "B". The Current Tank is installed in an underground concrete vault and has a capacity of approximately 2,000 gallons, a reduction of 4,000 gallons from the 1980 Part A Application's tank storage capacity and a reduction of 1,550 gallons of the actual capacities of Tanks #1 and #2. The Current Tank was and is authorized under the ISD and has been permitted by the Torrance Fire Department, the Torrance Building Department and the South Coast Air Quality Management District. These permits are enclosed as Attachments "I", "J", and "K", respectively.

(7) Current Storage Yard:

While the Current Yard, again, has not traditionally been the name used at the Torrance Plant for this container storage area, this designation is used in this letter for purposes of ease of identification. The Current Yard is approximately 609 square feet in area, was installed in 1983 and partially replaced Yard #1 and Yard #2. As a result, the total container storage at the Torrance Plant was reduced by about 12 square feet and, under current practices, stores up to a maximum capacity of approximately 2,800 gallons, a significant decrease from the 9,600 gallons of container storage capacity indicated in the 1980 Part A Application. The Current Yard was and is authorized by the ISD and was permitted by the Torrance Building Department. That permit is enclosed as Attachment "J". The Current Yard is shown as the "Current Container Storage Yard" on Attachment "B".

(8) Current Wastewater Treatment Unit Filter Cake Storage Roll-Off Box:

In 1985, HAC completed installation of a new wastewater treatment unit which is subject to the pretreatment provisions of the federal Clean Water Act (33 U.S.C. § 1317(b)). The filter cake was stored in a sixteen cubic yard roll-off box. This roll-off box was recently replaced by a four cubic yard roll-off box which is located at the "Current Wastewater Treatment Plant" shown on Attachment "B". HAC believes that this roll-off box, as part of the wastewater treatment unit, is exempt from regulation under RCRA as provided in 40 C.F.R. 265.1(c)(10) and 40 C.F.R. 270.1(c)(2)(v) (see OSWER Policy Directives 9503.52-1A and 9503.51-1A: "the Agency has clarified the definition of tank - - for [the wastewater treatment unit] exemption - - to include unit operations such as presses, filters, sumps, and many other types of processing equipment" (OSWER Policy Directive, 9503.52-1A, p.3); "[i]t is, however, true that the definition of "tank" is rather broad, covering unit operations which are obviously not tanks such as presses, filters, sumps, and many other types of processing equipment" (OSWER Policy Directive 9503.51-1A, p.3)).

Even if the roll-off box is not exempt under the wastewater treatment unit exemption, it represents a facility upgrade well within the process capacities set forth in HAC's 1980 Part A Application as recently amended for purposes of California regulation. The 1980 Part A Application included 9,600 gallons of container storage. The 16 cubic yard roll-off box represents less than 3,300 gallons. As discussed above, the 1983 container storage yard replacement resulted in a decrease of about 6,800 gallons from the amount included in the 1980 Part A Application. In any event, the less than 3,300 gallon capacity of the roll-off box is well within the gallonage amounts included in that application. We are including, for your information, a recent Part A (Attachment "L") which was requested by DHS and includes the wastewater treatment unit which is regulated under California law, but again, is not regulated under RCRA.

B. Explanation of Compliance with Applicable Regulatory Standards:

HAC believes that removal and replacement of Tank #1, Tank #2, Yard #1 and Yard #2 were in compliance with applicable regulatory standards. Furthermore, HAC does not believe that any closure occurred in 1983, but even if a closure did arguably occur, as explained below that activity was a partial closure in compliance with regulatory standards.

While the attached documents show that notification of the partial closure activities at the Torrance Plant was provided to DHS and to CWQCB, notification of closure and submission of a closure plan and closure certification were not required under applicable regulatory standards for these units. Thus, the Torrance Plant did not violate RCRA or the California Hazardous Waste Control Act, as amended, Cal. Health & Safety Code § 25100 et seq., even if the 1983 replacement activities constituted a partial closure.

Under RCRA, a state may receive authorization to implement a hazardous waste management program in lieu of the federal RCRA program. 42 U.S.C. 6926. In authorized states, facilities comply with applicable state laws rather than RCRA. Thompson v Thomas, 680 F. Supp. 1 (D.D.C. 1987). States may also receive authorization for portions of the RCRA program.

California received authorization for Phase I of the RCRA program on June 4, 1981. 46 Fed. Reg. 29935 (June 4, 1981). The Phase I authorization allowed California to operate its program in lieu of the federal RCRA regulations in 40 C.F.R. 260, 261, 262, 263 and 265 which were promulgated on May 19, 1980. Id. at 29936-37. Thus, facilities

which treated, stored or disposed of hazardous waste after June 4, 1981, were no longer required to comply with these federal RCRA regulations. On January 11, 1983, California received interim authorization to issue permits in lieu of RCRA permits for facilities which were hazardous waste tank, container or waste pile facilities. 48 Fed. Reg. 1197 (January 11, 1983). This authorization allowed California to operate its program in lieu of the federal RCRA regulations in 40 C.F.R. 264 for the specified types of facilities. Id.; see also 48 Fed. Reg. 31027 (July 6, 1983) (extension of authorization); and 51 Fed. Reg. 4128 (January 31, 1986) (expiration of authorization).

Thus, after June 4, 1981 (and until January 31, 1986), a facility in California was required to comply with state regulations rather than federal RCRA regulations for tank and container storage units. To achieve authorization, California, rather than merely promulgating RCRA interim status type regulations, also issued so-called "interim status documents" to facilities which had obtained interim status under RCRA. 46 Fed. Reg. 29935 (June 4, 1981). In granting California Phase I RCRA interim authorization, EPA determined that issuance of these documents under California law made California law substantially equivalent to the federal interim status standards under RCRA. Id.

The Torrance Plant was issued the ISD on January 12, 1982, which was effective December 16, 1981. The ISD is enclosed as Attachment "M". Section V of the ISD ("Section V") and Section I.1.(d) set forth the closure plan and notification requirements applicable to the facility. Section V appears to incorporate, with minor revisions, the federal RCRA regulations governing closure of interim status facilities which were applicable from January, 1981 through October, 1986 when EPA's new partial closure regulations took effect. Section V contains no requirement for notification or submission of a closure plan prior to a partial closure of the facility. Subsection V.2(b) only requires that a closure plan be submitted prior to "closure". If that provision was intended to apply to a "partial closure,"the Section would have been written like Subsection V.2(a)(1) of the ISD which expressly includes "partial closure". Also, the term "closure," as it is used in Subsection V.2(b) of the ISD, cannot be construed to include "partial closure" because "closure" is used throughout Section V to describe the closure that occurs at the end of a facility's operating life. see ISD, Subsections V.3, V.4, and V.5.

An examination of the federal RCRA regulations upon which Section V of the ISD was based shows that during the relevant time period they did not require a facility to provide notice or to submit a closure plan before engaging in "partial closure" which addresses tank or container storage units. The interim status closure regulations upon which Section V was based were: (i) proposed on December 18, 1978 (43 Fed. Reg. 58996); (ii) promulgated on May 19, 1980 (45 Fed. Reg. 33196), and (iii) later modified

on January 12, 1981 (46 Fed. Reg. 2820). In the same manner as Section V, the regulations do not expressly state that "partial closures" which address tanks or container storage units trigger the closure notification or closure plan or certification submission provisions of the federal RCRA regulations. Nothing in the preambles to the Federal Register notices for these regulations states that any notification or submission of plans is required prior to "partial closure". In fact, the preamble to the proposed regulation stated that no notification was required for "partial closures" that involved tanks or container storage units. 43 Fed. Reg. 59004 (December 17, 1878). Furthermore, in the preamble to a proposed regulation which revised the RCRA closure regulations, effective October 29, 1986, EPA stated that the regulations upon which Section V was based were being modified so that they "explicitly" covered "partial closures" at regulated facilities. 50 Fed. Reg. 11070 (March 19, 1985). Moreover, the final 1986 regulation, which was the result of this 1985 proposed rulemaking, explicitly exempts partial closures which involve only tanks and other container storage units from the closure notification and closure plan and certification submission requirements of the federal regulations and defers review of those closure activities until final closure of the facility. 51 Fed. Reg. 16428 (May 2, 1986). Consequently, the federal RCRA regulations for interim status facilities have never required closure notification, closure certification or closure plan submission for partial closures which address tank or container storage units.

Section I.1.(d). of the ISD requires notification of at least 30 days prior to closure of the "facility". The section is inapplicable because the facility only engaged in replacement, or no more than partial closure as discussed above. Furthermore, DHS was notified of the replacement of the units at least 30 days prior to replacement.

Applicable California regulations and laws also do not require that the facility submit a closure plan or notification prior to a partial closure which addresses tank or container storage units. At the time of the 1983 partial closure at the Torrance Plant, no state regulation addressed the notification requirement applicable to the closure of interim status facilities. The only regulation, 22 Cal. Admin. Code § 66402 (1983), which could arguably apply to the "partial closure" is found in an Article which addresses facilities with "permits." see 22 Cal. Admin. Code, Article 4. Because the Torrance Plant did not have a hazardous waste permit under California law, see Attachment "M", the regulation is obviously inapplicable. Furthermore, the regulation only addresses closure of a "facility", whereas the Torrance Plant only closed four "hazardous waste management areas". Compare 22 Cal. Admin. Code § 66096 ("hazardous waste facility" is an operation which includes at least one "hazardous waste management area"), with 22 Cal. Admin. Code § 66095 ("hazardous waste management area" is an "area where

hazardous waste are stored, mixed, handled, treated, discarded or disposed of"). Under Section 25246 of the California Health and Safety Code (1983), a facility which had not previously submitted a "closure and maintenance report", the substantive equivalent of a closure plan, was only required to submit that document prior to closure of the "hazardous waste facility". While the term "hazardous waste facility", is not expressly defined in the statute, the definition of "hazardous waste property", which can include more than one treatment area, implies that "hazardous waste facility" refers to a geographical location which is greater than discrete "hazardous waste management areas" or units at a facility with multiple "hazardous waste management areas" or units. See Cal. Health & Safety Code § 25117.3 (1983). Thus, HAC does not believe that the Torrance Plant was required to provide a closure notification or submit a closure plan prior to closing Tank #1, Tank #2, Yard #1 and Yard #2.

Regardless of whether closure notification or submission of a closure plan to DHS or CWQCB was required, the Torrance Plant did, in fact, provide prior notification to DHS of its intent to replace the two tanks and two container storage areas. A review by HAC of Torrance Plant and state files for the facility has revealed the following documents regarding the removal of the tanks and container storage areas. A copy of the field notes from an inspection by DHS on October 25,1982 is attached as Attachment "N". These notes show that the inspector was informed that removal of the storage areas would take "6 - 9 months" to complete and that these units would be replaced in new locations at the facility. In a letter dated December 2, 1982, based on the inspection, DHS requested that a plan for the relocation of the storage areas be submitted to DHS. A copy of this letter is attached as Attachment "O". This letter did not request that a closure plan be submitted to DHS or CWQCB which is consistent with the interpretation that only final closures of facilities are subject to regulatory or permit requirements for the submission of closure plans. A December 22, 1982 letter from the Torrance Plant in response to Attachment N stated that the facility has a "plan for correction of the noted items in order to come into compliance with Interim standards." This letter is enclosed as Attachment "P". This letter also stated that plans for the replacement storage area would be provided for DHS review.

HAC had two closure plans which addressed the facility prior to the replacement of the storage areas. These plans are enclosed as Attachment "Q" and Attachment "R". Attachment "Q" probably was developed in 1981 or 1982 while Attachment "R" was subsequently developed to address the 1983 replacement. DHS's failure to address a closure plan in Attachment "O" suggest that DHS had received either or both of these plans around the time of the inspection of the facility. There are also notes which we have found which seem to address closure of Tank #1 (B-230 solvent tank in the notes).

These notes are enclosed as Attachment "S". Facility files show that Tank #1 and Tank #2 were removed on July 1, 1983, and June 24, 1983, respectively. The DHS files show that contacts were made between representatives of DHS and CWQCB in July, 1983 regarding the removal and replacement activities. The relevant material is attached as Attachment "T".

C. Explanation of Replacement Compliance with Applicable Regulatory Standards:

HAC believes that the replacement of the two tanks and the two container storage areas with the replacement hazardous waste management units did not violate any applicable regulatory standards. As previously discussed, California was authorized by EPA to regulate interim status facilities such as the Torrance Plant in lieu of federal RCRA regulation of such facilities during the period in which the removal and replacement activities occurred. California issued the ISD to the Torrance Plant which was regarded as setting the regulatory standards for the operation of the facility.

Because California regulated the facility in lieu of EPA, any approval of the establishment of replacement storage units would be made by DHS rather than by EPA. The documents obtained through the facility's file search show that DHS approved, tacitly if not expressly, the replacement activity and has never objected to it. see Attachments "N", "O", "P" and "T".

Construction of the replacement units was consistent with the ISD and applicable California laws and regulations. Subsection I.4 of the ISD provides that the "owner or operator" of the facility shall not "[e]mploy processes not described in the permit application" or "[m]ake substantial modifications or additions to the facility". Section 25200.5(b) of the California Health & Safety Code contains the same prohibition on changes to interim status facilities. Cal. Health & Safety Code § 25200.5(b)(2) (1983). HAC believes that the removal and replacement of the four units involved here did not constitute a "process" addition not previously described in the 1980 Part A Application or a "substantial" modification or addition.

The storage of hazardous waste in tanks and containers was the process used in both the old and the replacement units. Therefore, no process which was not in the 1980 Part A Application was used at the facility. Assuming that replacement units were a "modification" or "addition" to the facility, the changes cannot be considered to be "substantial". The term "substantial" is not defined by statute, regulation or the ISD.

Because the statutory provision was enacted after the federal regulations, the term "substantial" should be construed to apply only to changes which would require a permit under the federal interim status RCRA regulations. Under the federal RCRA regulations, subject to limitations not applicable here, changes in waste operations may generally be made to interim status facilities so long as the cost of those changes does not "exceed[] 50% of the capital cost of a comparable entirely new [hazardous waste management facility]". 40 C.F.R. 270.72(e) (1983); see also 54 Fed. Reg. 9596 (March 7, 1989) ("[a]n interim status facility generally may change its waste management operations without notification or prior agency approval, except for changes specifically identified at [40 C.F.R. 270.72(a)-(d).") Because the replacement consisted of replacement of the two tanks and two container storage yards with units of smaller capacity, it is reasonable to assume that, while actual costs are not presently available, the replacement costs did not exceed this figure. Therefore the replacement activity cannot be considered to be a "substantial" addition or "modification" to the facility.

Section I.1.(d) of the ISD requires that the Torrance Plant notify DHS at least 30 days prior to a "proposed change in the . . . method of operation of the facility". 22 Cal. Admin. Code § 66402(a) includes a similar requirement. This latter regulatory provision is, however, inapplicable to the facility because it is in a section of the regulations which only applies to facilities with a "permit". see 22 Cal. Admin. Code, Article 4. With regard to compliance with the ISD condition, as previously discussed, the replacement units would not constitute a change in a "method of operation" at the facility because there was no increase in capacity and the method of operation remained storage in tanks and containers. In addition, the DHS was notified of the replacement activities and monitored and never objected to the replacement of these units for an eight year period.

D. Effect of expiration of California's authorization to implement a hazardous waste program in lieu of the federal RCRA program:

As previously discussed, California was authorized to enforce a hazardous waste program in lieu of the federal RCRA program from January 4, 1981, 46 Fed. Reg. 29935 (June 4, 1981), through January 31, 1986, 51 Fed. Reg. 4128 (January 31, 1986). HAC does not believe that the expiration of this authorization: (i) affects the establishment of the Current Tank and the Current Yard; (ii) affects removal and replacement of Tank #1, Tank #2, Yard #1 and Yard #2; or (iii) requires the Torrance Plant to submit a revised RCRA Part A Application to EPA.

First, the replacement storage units were established by HAC and appear to have been approved by California prior to the expiration of state authorization. No federal statute or regulation prohibits the continued operation of these units. In fact, EPA has stated that its policy with respect to program management after termination of state authorization is to "build upon what the state has accomplished when it was authorized", 50 Fed. Reg. 48407 (November 25, 1985).

Secondly, as previously discussed, the removal and replacement of the previous storage units was in compliance with applicable federal RCRA regulations. Thus, the termination of California's authorization does not affect the replacement of these units.

Third, no federal statute or regulation requires the submission of a revised RCRA Part A Application by facilities in a state which has had its authorization terminated. In addition, in the Federal Register notices of November 25, 1985 (50 Fed. Reg. 48406) and January 31, 1986 (51 Fed. Reg. 4128) which addressed the termination of California's authorization, EPA did not state that any new or revised documents were required to be submitted to reflect changes that occurred at facilities under the period of state authorization.

Thus, the termination of California's authorization did not affect the Torrance Plant, except that the facility is now regulated under both federal and state law.

2. A copy of all closure documentation for all of the hazardous waste storage facilities listed in #1 above, including closure plan approvals, maximum waste inventories and closure certification required by 40 C.F.R. Part 265, Subpart G.

Enclosed as Attachment "Y" are pages of documents which address Item #2 in Mr. Zelikson's letter. Maximum waste capacities are given in HAC's 1980 Part A Application and in Attachment "Q" for the period prior to the removal and replacement of Tanks #1 and #2 and Yards #1 and #2. Maximum waste capacities are given for the period thereafter by HAC's most recent closure plan which is enclosed as Attachment "U". Three other interim closure plans, which cover the Current Tank and the Current Yard, are enclosed as Attachments "V", "W" and "X" respectively. As explained in Paragraph I.B. above, no closure plan approvals were necessary nor were closure certifications under the applicable regulations because, at the most, the Torrance Plant engaged in a partial closure which addressed tank and container storage units.

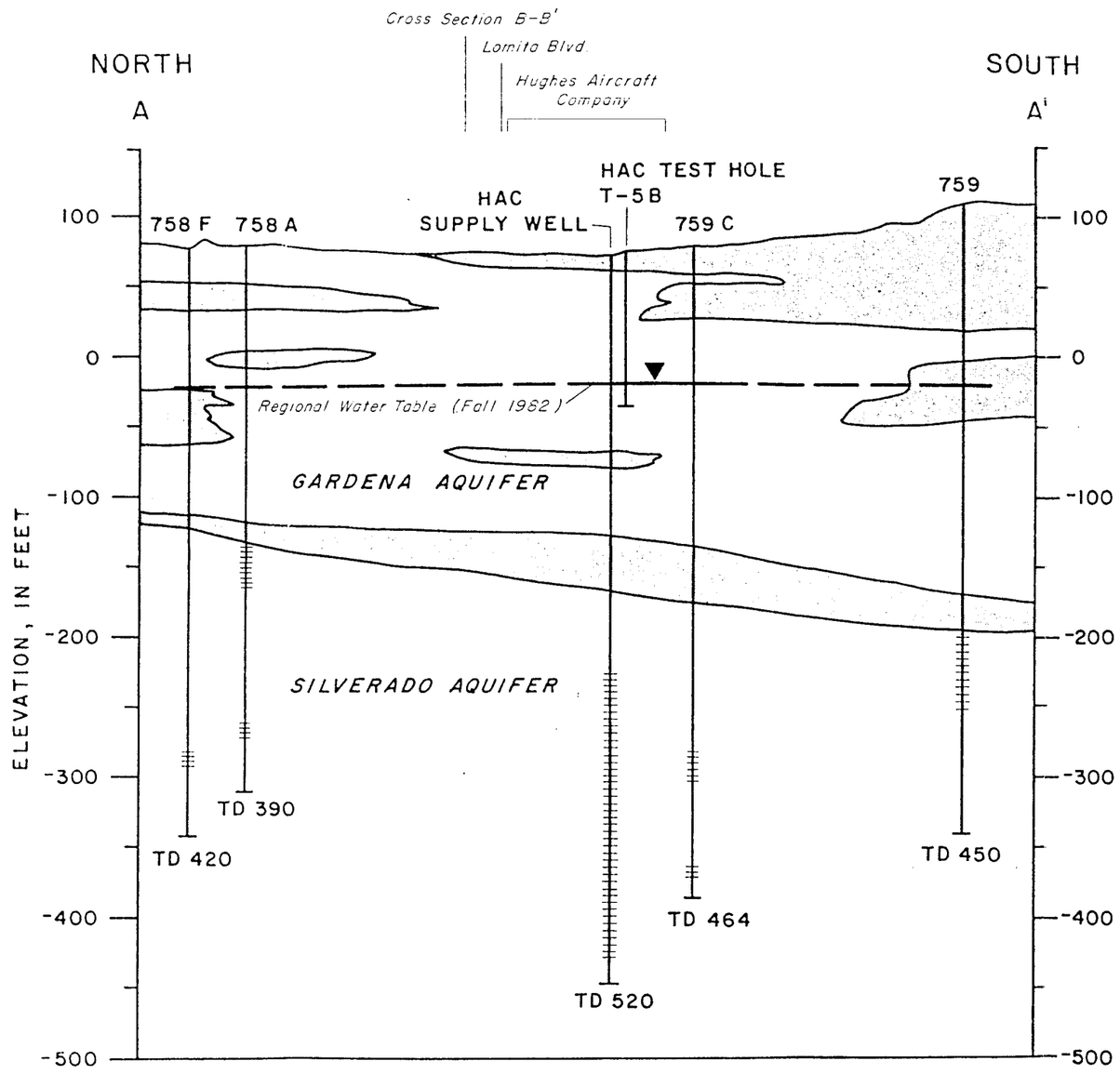
If you have any questions concerning this matter, please contact the undersigned.

Very truly yours,

Ronald A. Forbess
Vice President, Product Operations
Industrial Electronics Group
Hughes Aircraft Company

djs

Enclosures



0 1,000 2,000
FEET

EXPLANATION

SAND
Predominately sand with some gravel and clay lenses. Moderate to high permeability.

CLAY
Predominately clay and silt with localized sand lenses. Low permeability.

Well Location

759 C — IDENTIFIER
Well numbering system used by L.A.C.F.C.D., Los Angeles, California (Refer to Appendix D, Figure D-1)

PERFORATED INTERVAL

TD 464 — TOTAL DEPTH

HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

HYDROGEOLOGICAL CROSS SECTION A–A'

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 3

TABLE 1

CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN SOIL SAMPLES

ORGANIC COMPOUND (micrograms/kilogram)	TEST HOLE T-1 SAMPLE DEPTH, FEET						TEST HOLE T-2 SAMPLE DEPTH, FEET			TEST HOLE T-3 SAMPLE DEPTH, FEET			TEST HOLE T-4 SAMPLE DEPTH, FEET			TEST HOLE T-5A SAMPLE DEPTH, FEET				TEST SAMPLE
	5	8	22	31	39	49	11	20	30	10	20	30	10	20	30	25	30	36	75	
ACETONE[1/]	82	64	ND	520	30	ND	ND	ND	ND	ND	ND	ND	76	46	180	ND	ND	ND	ND	
CHLOROBENZENE	ND	ND	ND	740	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
CHLOROFORM	22	21	25	ND	ND	23	20	ND	22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1-DICHLOROETHYLENE	ND	ND	37	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	
ETHYLBENZENE	ND	ND	ND	610	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
METHYLENE CHLORIDE	54	ND	59	340	72	ND	ND	ND	28	ND	ND	28	ND	22	ND	ND	ND	ND	ND	
TETRACHLOROETHYLENE	780	300	8,600	440,000	62	69	25	ND	160	ND	ND	270	41	21	ND	8	3	ND	ND	
TOLUENE	ND	ND	550	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,2-TRANS-DICHLOROETHYLENE	570	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	34	ND	ND	ND	
1,1,1-TRICHLOROETHANE	ND	ND	670	18,000	ND	ND	ND	30	53	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	
TRICHLOROETHYLENE	840	26	260	19,000	ND	39	82	140	230	ND	ND	ND	ND	ND	25	66	13	1	ND	
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9	3	ND	
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	7	N

NOTE: ND = None Detected

1/ - Acetone is not an EPA priority pollutant

All samples from test holes T-1, T-2, T-3, and T-4 were analyzed by RADIAN CORPORATION, Sacramento, California

All samples from test holes T-5A and T-5B were a Brown and Caldwell, Analytical Services Division, Pasa

[illegible]

TABLE 2

CONCENTRATION OF COMMON IONS IN GROUNDWATER SAMPLES

CONSTITUENT (milligrams per liter)	TEST HOLE T-5B	PLANT SUPPLY WELL
Sodium	198	94
Potassium	2.3	2.6
Calcium	81	31
Magnesium	25	11
Carbonate	0	0
Bicarbonate	328	290
Chloride	184	72
Sulfate	30	1.8
Nitrate (NO_3)	177	0.75
Total Dissolved Solids (evaporated @ 180°C)	705	248
Electrical Conductance (micromhos @ 25°C)	1,330	580

TABLE 3

CONCENTRATION OF SELECTED ORGANIC COMPOUNDS, TRACE METALS, AND CYANIDE DETECTED IN GROUNDWATER SAMPLES

ORGANIC COMPOUNDS (micrograms per liter).	TEST HOLE T-5B	PLANT SUPPLY WELL
Trichloroethylene	65	ND
Trichlorofluoromethane	12	9
Chloroform	ND	12
Tetrachloroethylene	11	ND
1,1,1-Trichloroethane	5	ND
Phenol	7	ND
Hexahydroazepinone	10	ND
TRACE METALS AND CYANIDE (milligrams per liter)		
Thallium	0.004	ND
Antimony	0.020	ND
Arsenic	0.014	ND
Iron	ND	0.09
Manganese	0.09	0.08
Cyanide	0.025	ND

NOTE: ND = None Detected

Analyses performed by Brown and Caldwell, Analytical Services Division, Pasadena, California

ATTACHMENTS

TO

HUGHES AIRCRAFT COMPANY

LETTER, DATED MAY 2, 1991

TO

PERIANN WOOD, U.S.E.P.A.

A

Please print or type with ELITE type *(12 characters/inch)* in the unshaded areas only.

Form Approved OMB No. 158-S79016
GSA No. 0246-EPA-OT

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.	CAD041666819
I. NAME OF INSTALLATION	HUGHES AIRCRAFT COMPANY*
II. INSTALLATION MAILING ADDRESS	3100 W LOMITA BLVD TORRANCE, CA 90509
III. LOCATION OF INSTALLATION	3100 W LOMITA BLVD TORRANCE, CA 90509

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

DETACH

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER	APPROVED	DATE RECEIVED (yr., mo., & day)
F (T/A C 1)		

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3

CITY OR TOWN: 4 | ST. | ZIP CODE

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5

CITY OR TOWN: 6 | ST. | ZIP CODE

IV. INSTALLATION CONTACT

NAME AND TITLE *(last, first, & job title)*	PHONE NO. *(area code & no.)*
2 MAHLOW, PAUL ENVRN HLTH&SFTYADR	213-534-2121

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER/Lessee: 8 HUGHES AIRCRAFT COMPANY

B. TYPE OF OWNERSHIP *(enter the appropriate letter into box)*

F = FEDERAL
M = NON-FEDERAL

M

VI. TYPE OF HAZARDOUS WASTE ACTIVITY *(enter "X" in the appropriate box(es))*

- [X] A. GENERATION
- [ ] B. TRANSPORTATION *(complete item VII)*
- [X] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION *(transporters only – enter "X" in the appropriate box(es))*

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER *(specify)*:

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION *(complete item C)*

C. INSTALLATION'S EPA I.D. NO.

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

I.D. – FOR OFFICIAL USE ONLY

W

IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1 F001	2 F002	3 F003	4 F005	5 F007	6 F008
7 F015	8 F017	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial processes your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

- ☐ 1. IGNITABLE (D001)
- ☐ 2. CORROSIVE (D002)
- ☐ 3. REACTIVE (D003)
- ☒ 4. TOXIC (D000)

X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

DETACH

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
Paul F. Mahlow, Jr	P. F. Mahlow, Jr. Environmental Health & Safety Admin.	8/12/80

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ➤ • CAD041666819

HUGHES AIRCRAFT COMPANY*
3100 W LOMITA BLVD
TORRANCE CA 90509

INSTALLATION ADDRESS ➤ 3100 W LOMITA BLVD
TORRANCE CA 90509

EPA Form 8700-12A (4-80)

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F CAD041666819

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-3 which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

LABEL ITEMS

I. EPA I.D. NUMBER: CAD041666819

III. FACILITY NAME: HUGHES AIRCRAFT COMPANY*

V. FACILITY MAILING ADDRESS: 3100 W LOMITA BLVD
TORRANCE, CA 90509

VI. FACILITY LOCATION: 3100 W LOMITA BLVD
TORRANCE, CA 90509

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	MARK 'X' NO	MARK 'X' FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

SPECIFIC QUESTIONS	MARK 'X' YES	MARK 'X' NO	MARK 'X' FORM ATTACHED
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP HUGHES AIRCRAFT COMPANY

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: 2 MAHLOW, PAUL, JR. ENVRNHLTH SFTY ADM

B. PHONE *(area code & no.)*: 213 517 5032

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 3100 W. LOMITA BL.

B. CITY OR TOWN: 4 TORRANCE,

C. STATE: CA

D. ZIP CODE: 90509

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 3100 W. LOMITA BLVD.

B. COUNTY NAME: LOS ANGELES

C. CITY OR TOWN: 6 TORRANCE

D. STATE: CA

E. ZIP CODE: 90509

F. COUNTY CODE *(if known)*: LA

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
C 7 (specify)	C 7 (specify)
C. THIRD	**D. FOURTH**
(specify)	C 7 (specify)

VIII. OPERATOR INFORMATION

A. NAME: C 8 HUGHES AIRCRAFT COMPANY

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☒ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)
P (specify)

D. PHONE (area code & no.): C A 213 517 6000

E. STREET OR P.O. BOX: 3100 W. LOMITA BLVD

F. CITY OR TOWN: C B TORRANCE

G. STATE: CA

H. ZIP CODE: 90509

IX. INDIAN LAND
Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): C 9 T N I N/A	D. PSD (Air Emissions from Proposed Sources): C 9 T P I	
B. UIC (Underground Injection of Fluids): C 9 T U I N/A	E. OTHER (specify): C 9 T I M01538	(specify) Air Quality Management District Permit
C. RCRA (Hazardous Wastes): T R I N/A	E. OTHER (specify): C 9 T I M01542	(specify) Air Quality Management District Permit

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Engineering and manufacturing of electronic components and devices.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive	[signature]	11/5/80

COMMENTS FOR OFFICIAL USE ONLY

C

FORM 1 GENERAL

EPA I.D. NUMBER CAD041666819

X. EXISTING ENVIRONMENTAL PERMITS Continued

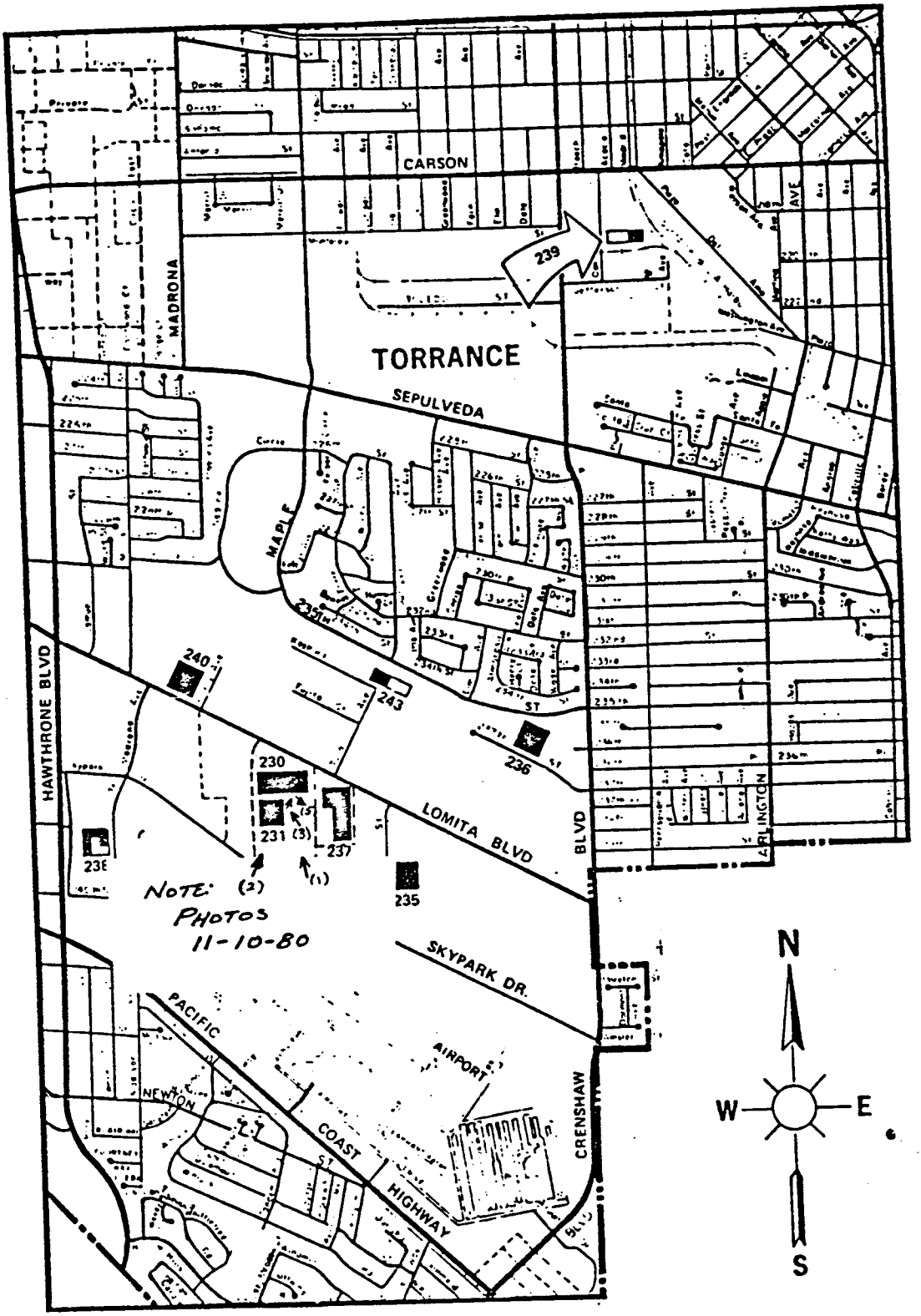
South coast Air Quality Management District numbers (operation permits for degreasers):

M01539

M01541

M01543

TORRANCE BUILDING SITES

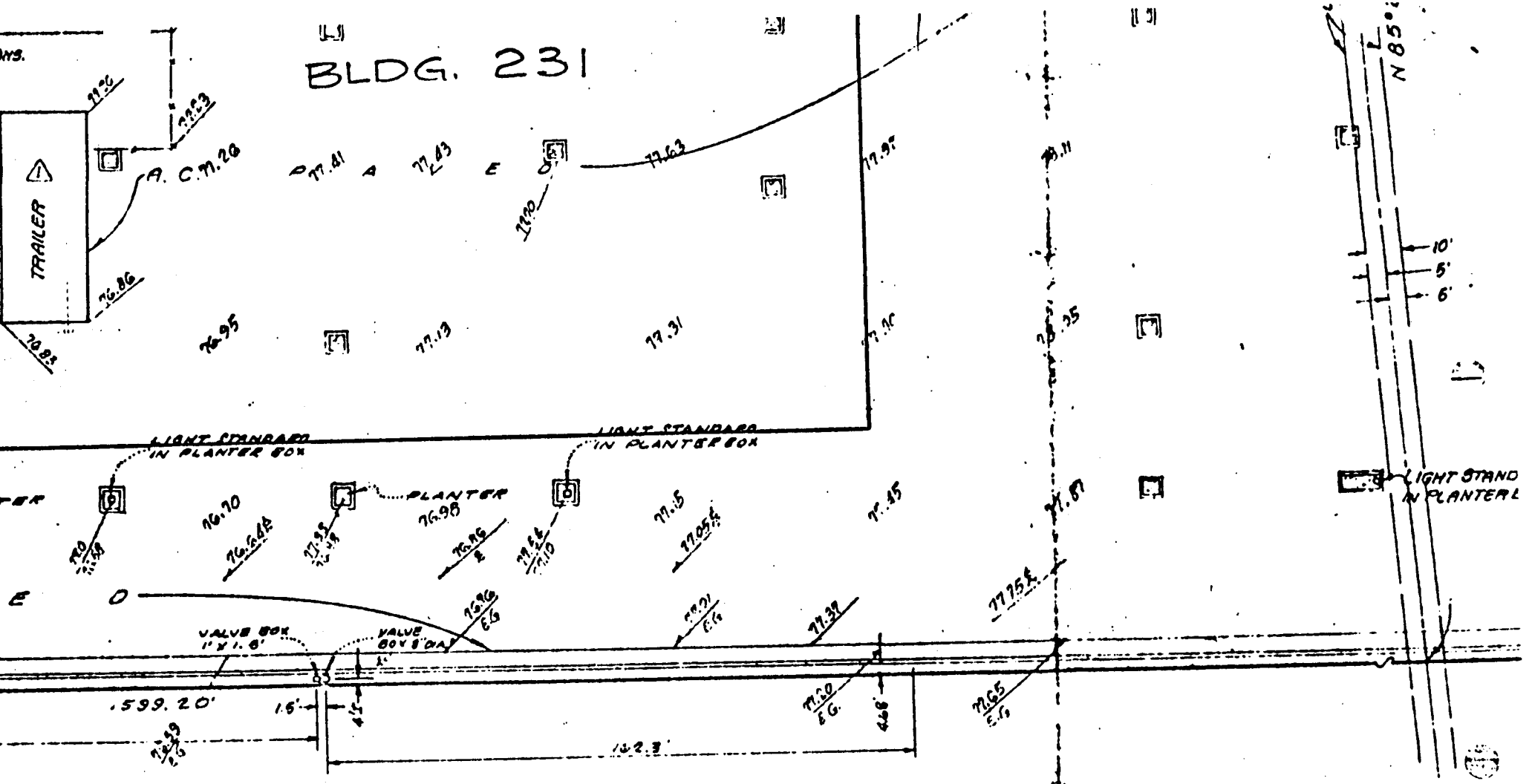


BLDG.	ADDRESS	SQ. FT.
230	3100 LOMITA BLVD.	238,364
231	3100 LOMITA BLVD	80 832
235	24120 GARNIER ST	66,000
236	2555 237TH ST	22,058
237	3050 LOMITA BLVD	49,385
238	23822 HAWTHORNE BLVD	7,500
239	1840 OAK ST	9,000
240	3415 LOMITA BLVD	34,000
242	23510 TELO AVE	6,500

OPEN MAR '81

SCALE FEET

2000 1000 0 1000 2000



	BY
	B.R.

LEGAL DESCRIPTION

A PORTION OF B. S. WESTON'S ALLOTMENT, RANCHO LOS PALOS VERDES M. R. 1, PAGE 3, RECORDS OF LOS ANGELES COUNTY, STATE OF CALIFORNIA.

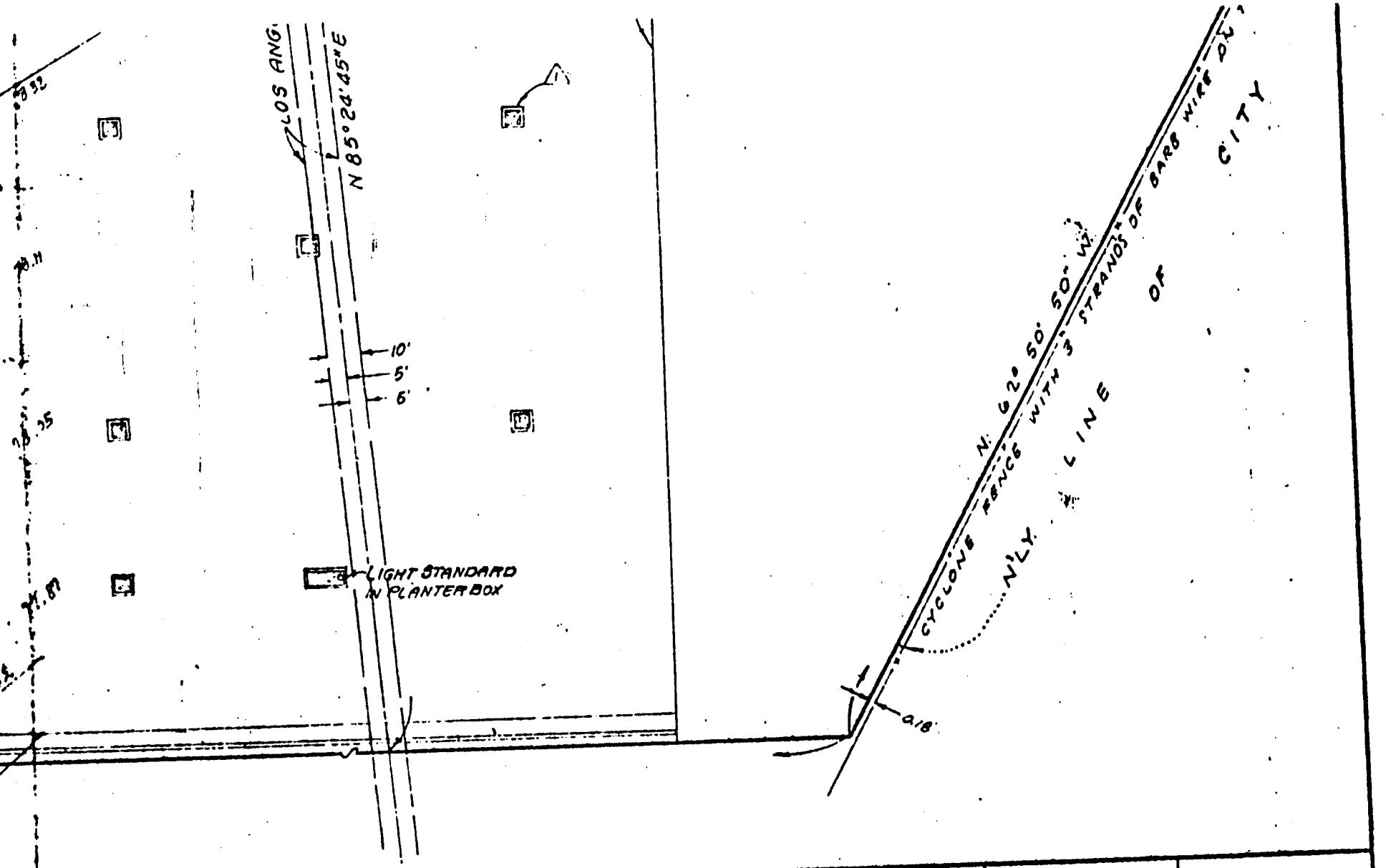
E. L. PEARSON AN

CIVIL ENGINEERS AND L

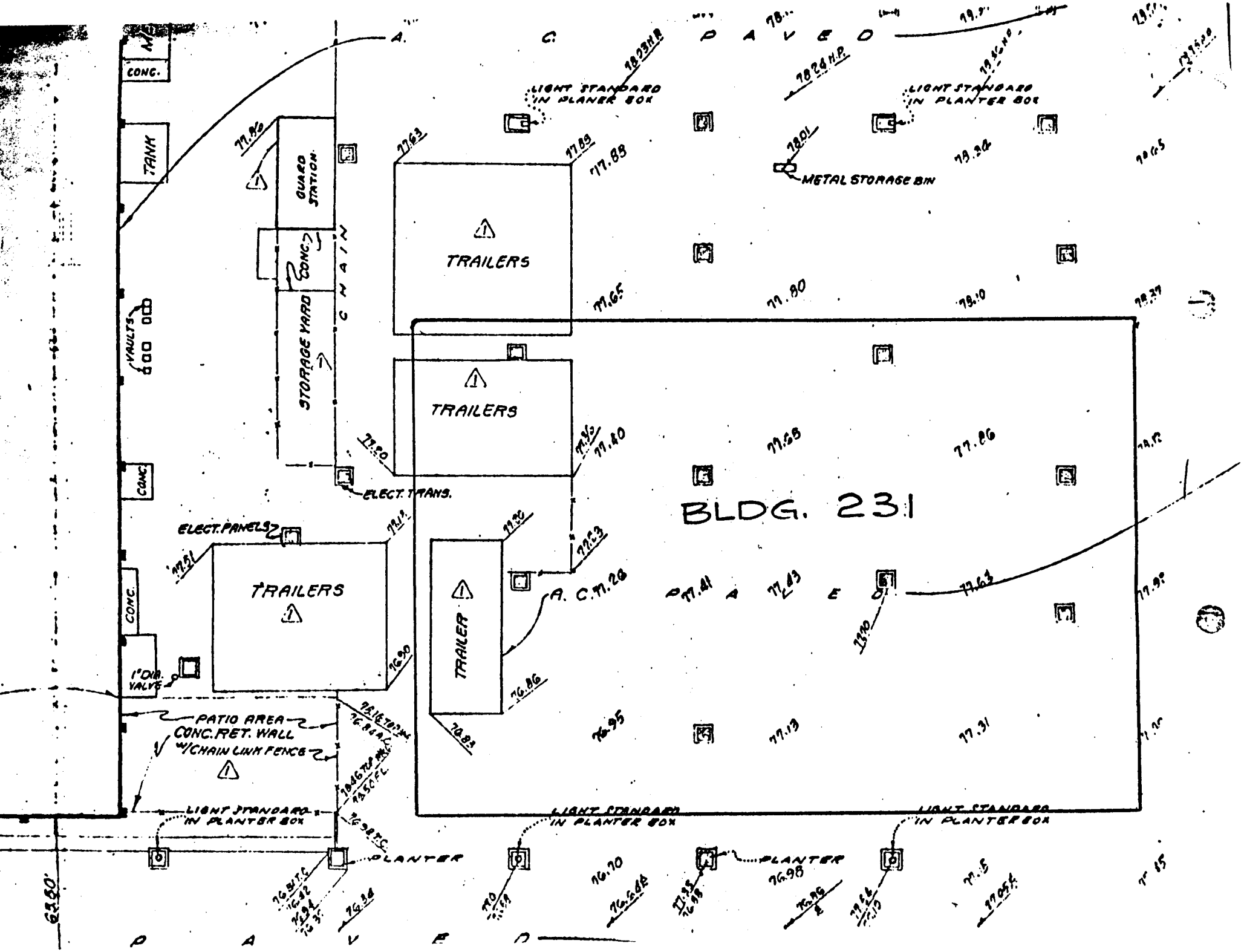
12345 SO. HAWTI

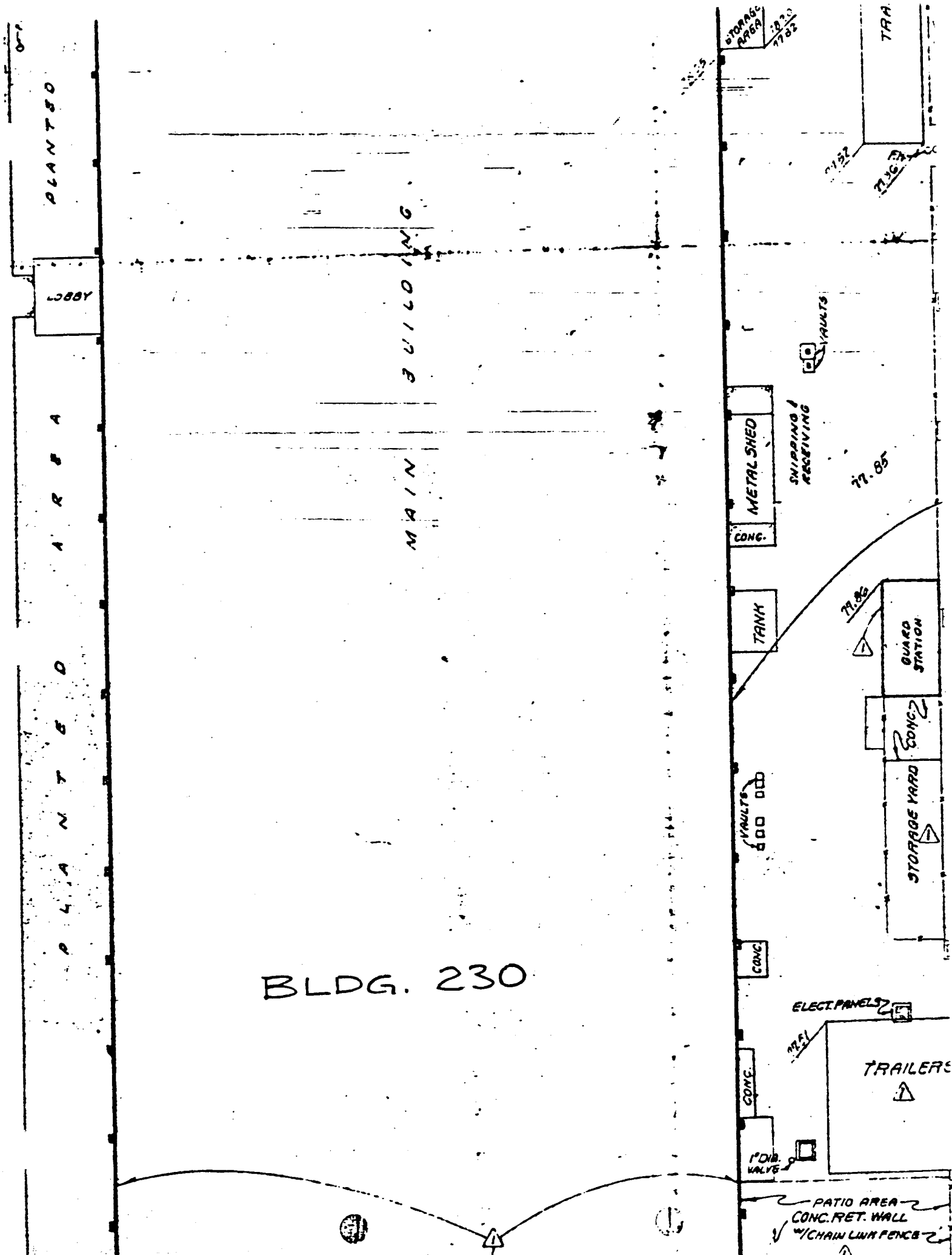
HAWTHORNE,

OS. 5-3377



N TMENT, GE 3, TE OF	**E. L. PEARSON AND ASSOCIATES** CIVIL ENGINEERS AND LAND SURVEYORS 12345 SO. HAWTHORNE WAY HAWTHORNE, CALIF. OS. 5-3377 SP. 2-2481	DESIGNED BY DRAWN BY Æ. D. C. CHECKED BY DATE MAY 31-1967	JOB NO. 76008	SHT. NO. OF SHEETS


CONC.
TANK
VAULTS
CONC.
CONC.
CONC.
1" DIA. VALVE
GUARD STATION
CONC.
STORAGE YARD
CHAIN
TRAILERS
TRAILERS
TRAILERS
TRAILER
ELECT. TRANS.
ELECT. PANELS
A. C. 77.26
BLDG. 231
PATIO AREA
CONC. RET. WALL
W/CHAIN LINK FENCE
LIGHT STANDARD IN PLANTER BOX
LIGHT STANDARD IN PLANTER BOX
LIGHT STANDARD IN PLANTER BOX
LIGHT STANDARD IN PLANTER BOX
METAL STORAGE BIN
PLANTER
PLANTER
PAVED
PAVED
62.50'


PLANTED
LOBBY
PLANTED AREA
MAIN BUILDING
BLDG. 230
STORAGE AREA
TAN
VAULTS
METAL SHED
SHIPPING & RECEIVING
77.85
CONC.
TANK
77.86
GUARD STATION
CONC.
STORAGE YARD
VAULTS
CONC
ELECT. PANELS
TRAILERS
CONC.
1" DIB. VALVE
PATIO AREA
CONC. RET. WALL
W/CHAIN LINK FENCE

(Fill in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F C A D 0 4 1 6 6 6 8 1 9

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility' EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY
6 7	0 4	1 4

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITI PROVIDE THE DAT *(yr., mo., & day)* OPE TION BEGAN OR IS EXPECTED TO BEG

YR.	MO.	DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided fo entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, the describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	UNIT O MEASUF CODE
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and th other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G	
X-2	T 0 3	20	E	
1	S 0 1	9600	G	
	S 0 2	6000	G	
3				
4				

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICI USE ONLY
5				
6				
7				
8				
9				
10				

CONTINUE ON REVER

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 3

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W C A D 0 4 1 6 6 6 8 1 9 F/A C 1

FOR OFFICIAL USE ONLY: W DUP F/A C 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F 0 0 1	13,660	P	S 0 1				
2	F 0 0 2	No sludge-this quantity added line#1	G	S 0 1				
3	F 0 0 3	62,400	P	S 0 2				
4	F 0 0 5	13,000	P	S 0 2				
5	F 0 0 7	11,900	P	S 0 1				
6	F 0 0 8	No smuldge - this quantity added line#5	G	S 0 1				
7	F 0 1 5	21,600	P	S 0 1				
8	F 0 1 7	720	P	S 0 2				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

CONTINUE ON REVERSE

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. (enter from page 1)

F 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground–level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
33 48 37 N	118 20 25 W

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER *	2. PHONE NO. (area code & no.)
E Hughes Aircraft Company Bldg. 237	213-517-600

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F 3050 Lomita Blvd.	G Torrance	CA	90509

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive		11/5/80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
W. H. Christoffers Vice President & Group Executive		11/5/80

CONTINUE ON PAG

* See Attachments for additional legal owners

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NEVADA BROKERS INC — 11-5-80

Name (print or type) — Signature — Date

Nevada Brokers, Inc.
E. P. Garnier
448 S. Canon Dr.
Beverly Hills, CA

E. P. Garnier

B

C

JUNE 15, 1983

INVESTIGATION OF SOIL CONDITIONS IN THE VICINITY OF BURIED TANKS, HUGHES AIRCRAFT COMPANY ELECTRON DYNAMICS DIVISION TORRANCE, CALIFORNIA

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA

HARGIS & MONTGOMERY, INC.

CONTENTS

	Page
. INTRODUCTION	1
. SOLVENT DISPOSAL TANKS	2
. SUBSURFACE CONDITIONS	3
. CONCENTRATION OF ORGANIC COMPOUNDS IN SOIL SAMPLES	5
Test Hole T-1	5
Test Hole T-2 and T-4	6
Test Hole T-3	6
. SUMMARY	7

TABLES

Table

1 ORGANIC COMPOUNDS AND TRACE METALS IN SOLVENT TANK FLUID SAMPLES

2 CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN SOIL SAMPLES

ILLUSTRATION

Figure

1 TEST HOLE LOCATION MAP

APPENDICES

Appendix

A DRILLING OF TEST HOLES

B DOCUMENTATION OF SOIL SAMPLING PROCEDURES

HARGIS & MONTGOMERY, INC.

INVESTIGATION OF SOIL CONDITIONS IN THE VICINITY OF BURIED TANKS, HUGHES AIRCRAFT COMPANY ELECTRON DYNAMICS DIVISION TORRANCE, CALIFORNIA

INTRODUCTION

This memorandum report presents the results of investigation of soil conditions in the vicinity of two buried solvent storage tanks at the Hughes Aircraft Company (HAC) Electron Dynamics Division (the Plant) in Torrance, California. The objective of this investigation was to determine if soils near the buried tanks might be contaminated with volatile organic compounds.

Information concerning the location, construction, and historic use of the solvent storage tanks was provided through discussions with HAC personnel and review of site maps. Both tanks are constructed of steel and buried several feet below land surface. The capacity of the largest tank is reported to be about 3,000 gallons, and the capacity of the smaller tank is about 500 gallons. Waste solvents are periodically disposed into tank no. 1 through buried plumbing and by pouring through an access port at the top of the tank. Waste solvents are disposed into tank no. 2 only through buried plumbing. The fluids are periodically pumped out and transferred to an appropriate licensed waste disposal site.

The investigation comprised the collection and laboratory analyses of soil samples obtained from four test holes drilled in the vicinity of the tanks (Figure 1). Soil samples collected from the test holes were analyzed for volatile organic compounds listed on the EPA priority pollutant list.

SOLVENT DISPOSAL TANKS

Two buried steel tanks have been used at the Plant for storage of used industrial solvents. Waste solvents are periodically pumped out of the tanks and then disposed at a licensed landfill. Tank no. I, located immediately south of Building no. 230, is reported to have a capacity of approximately 3,000 gallons (Figure 1). This tank was reportedly constructed in 1967. Tank no. 2, located east of Building no. 231, is reported to have a capacity of slightly greater than 500 gallons (Figure 1). HAC personnel have indicated that tank no. 2 was constructed in about 1974.

Periodic chemical analysis of fluid samples obtained from the tanks by HAC from December 1981 to February 1983 indicate the presence of organic compounds and trace metals (Table 1). Laboratory analysis indicate that acetone, methanol, tetrachloroethylene, and trichloroethylene (TCE) are the principal organic compounds detected in fluid samples collected from tank no. 1. TCE is the principal organic compound detected in fluid samples collected from tank no. 2 (Table 1). Acetone and methanol comprise about 11 to 35 percent of the fluid volume stored in tank no. 2 (Table 1).

Trace metal concentrations as high as 18.9 mg/l (milligrams per liter) lead, 9.9 mg/l chromium, and 83.3 mg/l zinc have been detected in fluid samples collected from tank no. 1. Concentrations as high as 4.21 mg/l lead, 2.05 mg/l chromium, and 128 mg/l zinc have been detected in fluid samples collected from tank no. 2. Lead and chromium have not been consistently detected in fluid samples collected from either tank (Table 1).

No data have been provided to Hargis & Montgomery, Inc. concerning the chemical composition of fluids in the tanks prior to December 1981.

SUBSURFACE CONDITIONS

Four test holes were drilled to investigate potential soil contamination in the immediate vicinity of the tanks (Appendix A). Test holes T-1, T-2, and T-4 were drilled near tank no. 1, and test hole T-3 was drilled near tank no. 2 (Figure 1). A lithologic log was compiled for each test hole describing the soils encountered (Appendix A, Tables A-1 through A-4).

Approximately four feet of sandy fill was encountered at the surface in each of the test holes. The fill overlies a grey-black clay unit ranging from six to nine feet thick which extends to depths of 11 to 13 feet below land surface. The clay layer is underlain by fine-grained sand with lenses of clayey sand extending to the maximum depth penetrated (Appendix A).

A definite solvent odor was detected in soils from test hole T-1, which was drilled at tank no. 1 (Figure 1). The first odor was detected in a soil sample collected from a depth of 6.5 feet, becoming more noticeable at a depth of 19 feet. At a depth of 20 feet, the solvent odor was very strong in soil samples collected directly from the auger bit. From a depth of 20 to 34 feet, the strong solvent odor persisted. Below a depth of 34 feet, the solvent odor seemed to diminish. At a depth of 49 feet, the maximum depth drilled, a slight solvent odor was detected.

No solvent odor was detected in soil samples collected from test holes T-2, T-3, or T-4.

The relative moisture content in soil samples appeared to range from slightly moist to very moist. No apparent saturated soils were encountered, but the depth interval 20 to 32 feet in test hole T-1 was very moist to wet (Appendix A, Table A-1).

The moisture content of soils appeared to be highest at test hole T-1. There does not appear to be a perched groundwater zone beneath the tanks.

CONCENTRATION OF ORGANIC COMPOUNDS IN SOIL SAMPLES

Fifteen soil samples, collected from test holes T-1, T-2, T-3, and T-4 were transmitted to Radian Corporation, Sacramento, California, for analyses of volatile organic compounds (Appendix B). Six soil samples from test hole T-1 and three soil samples from each of test holes T-2, T-3, and T-4 were analyzed (Appendix B, Table B-1). Laboratory results indicate that 10 of the EPA priority volatile organic compounds are present in the soil near tank no. 1 (Table 2). Low concentration of two volatile organic compounds were detected in soil samples collected from test hole T-3, drilled near tank no. 2.

TEST HOLE T-1

Test hole T-1 is located about seven feet south of the centerline of solvent tank no. 1 and was drilled to a depth of 49 feet (Figure 1). Laboratory analyses were performed on soil samples collected at depths of 5, 8, 22, 31, 39, and 49 feet. The highest concentrations of most compounds were detected in the soil samples collected from depths of 22 and 31 feet, including tetrachloroethylene as high as 440,000 µg/kg (micrograms per kilogram), and TCE and 1,1,1-trichloroethane (TCA) as high as 19,000 and 18,000 µg/kg, respectively (Table 2). Tetrachloroethylene was detected in all six soil samples, including 69 µg/kg in the sample collected at a depth of 49 feet. TCE was detected in five of the six soil samples, including 39 µg/kg in the soil sample collected at a depth of 49 feet.

Other organic compounds detected in soil samples collected at test hole T-1 include: acetone, chlorobenzene, chloroform, 1,1-dichloroethylene, ethylbenzene, methylene chloride, toluene, and 1,2-trans-dichloroethylene (Table 2).

TEST HOLES T-2 AND T-4

Test holes T-2 and T-4 are located approximately 25 feet east and 40 feet south of tank no. 1, respectively (Figure 1). Five organic compounds were detected in soil samples collected at test hole T-2, including chloroform, methylene chloride, tetrachloroethylene, TCA, and TCE (Table 2). Four volatile organic compounds, including acetone, methylene chloride, tetrachloroethylene, and TCE, were detected in soil samples collected from test hole T-4.

Three soil samples collected from test hole T-2, at depths of 11, 20, and 30 feet, were analyzed. The highest concentrations of organic compounds were detected in the soil sample collected at a depth of 30 feet, including: 230 µg/kg TCE, 160 µg/kg tetrachloroethylene, and 53 µg/kg TCA. Methylene chloride and chloroform were detected at concentrations less than 30 µg/kg (Table 2).

Three soil samples collected from test hole T-4, at depths of 10, 20, and 30 feet, were analyzed. Tetrachloroethylene was detected at concentrations of 41 and 21 µg/kg in the soil samples collected at depths of 10 and 20 feet, respectively. Trichloroethylene, at a concentration of 25 µg/kg, was detected in the soil sample collected at a depth of 30 feet (Table 2). Acetone was detected in soil samples collected at all three depths, with the highest concentration of 180 µg/kg detected at 30 feet (Table 2).

TEST HOLE T-3

Test hole T-3 is located within five feet of tank no. 2 (Figure 1). Three samples collected from test hole T-3, at depths of 10, 20, and 30 feet, were analyzed. No organic compounds were detected in the soil

samples collected from the depths of 10 and 20 feet. Methylene chloride and tetrachloroethylene, at concentrations of 28 and 270 µg/kg, respectively, were detected in the soil sample collected at a depth of 30 feet (Table 2).

SUMMARY

Fifteen soil samples collected from four test holes were analyzed to determine concentrations of volatile organic compounds. Eleven organic compounds were detected in soil samples collected at test hole T-1, located within a few feet of solvent storage tank no. 1 (Table 2). The most common compounds detected include tetrachloroethylene, TCE, and TCA. The highest concentrations of most organic compounds were detected in the soil sample collected at a depth of 31 feet.

Five organic compounds were detected in soil samples collected from test hole T-2, located about 25 feet east of solvent storage tank no. 1 (Table 2). The highest concentrations of these compounds were detected in a soil sample collected at a depth of 30 feet, which was the maximum depth penetrated at test hole T-2. TCE was detected at the highest concentration.

Low concentrations of tetrachloroethylene, TCE, and methylene chloride were detected in soil samples collected at test hole T-4, located about 40 feet south of solvent disposal tank no. 1. Acetone was detected in all three soil samples. No other organic compounds were detected (Table 2).

Two of three soil samples collected from test hole T-3, located within five feet of solvent disposal tank no. 2, did not contain any of the EPA priority volatile organic compounds (Table 2). The third and

deepest soil sample, collected at a depth of 30 feet, contained methylene chloride and tetrachloroethylene.

TABLES

TABLE 1

ORGANIC COMPOUNDS AND TRACE METALS
IN SOLVENT TANK FLUID SAMPLES

CONSTITUENTS	.....RANGE IN CONCENTRATION[1/]..... TANK NO. 1	TANK NO. 2
ORGANIC COMPOUNDS		
Freon	0.7 - 4.1%	0.8 - 1.8%
Acetone	3.9 - 31.1%	8.2 - 18.3%
Methanol	5.4 - 44%	2.7 - 16.7%
Isopropanol	1.0 - 2.2%	5.4 - 10.2%
1,1,1-Trichloroethane	0.7 - 1.3%	ND
Chloroform	ND - 0.7%	ND
Trichloroethylene	0.3 - 9.0%	36.1 - 56.7%
Tetrachloroethylene	2.7 - 15.2%	ND - 2.2%
Toluene	0.4 - 0.6%	ND - 0.3%
Xylenes	0.3 - 1.4%	ND - 2.7%
Phenols	(-)0.05 - 1.9 mg/l	61 - 722 mg/l
TRACE METALS		
Lead	(-)0.5 - 18.9 mg/l	ND - 4.21 mg/l
Chromium	(-)0.1 - 9.9 mg/l	ND - 2.05 mg/l
Zinc	2.2 - 83.3 mg/l	21.2 - 128 mg/l
WATER	39.4%	(-)1%

[1/]Concentrations are listed as percent by volume (%) and in milligrams per liter (mg/l).

(-) = less than

NOTE: All samples were analyzed by Truesdail Laboratories, Inc., Los Angeles, California during the period December 1981 to February 1983.

TABLE 2

CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN SOIL SAMPLES

ORGANIC COMPOUND (micrograms/kilogram)	TEST HOLE T-1 SAMPLE DEPTH, FEET						TEST HOLE T-2 SAMPLE DEPTH, FEET			TEST HOLE T-3 SAMPLE DEPTH, FEET			TEST HOLE T-4 SAMPLE DEPTH, FEET		
	5	8	22	31	39	49	11	20	30	10	20	30	10	20	30
ACETONE[1/]	82	64	ND	520	30	ND	ND	ND	ND	ND	ND	ND	76	46	180
CHLOROBENZENE	ND	ND	ND	740	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	22	21	25	ND	ND	23	20	ND	22	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHYLENE	ND	ND	37	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	610	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	54	ND	59	340	72	ND	ND	ND	28	ND	ND	28	ND	22	ND
TETRACHLOROETHYLENE	780	300	8,600	440,000	62	69	25	ND	160	ND	ND	270	41	21	ND
TOLUENE	ND	ND	550	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-TRANS-DICHLOROETHYLENE	570	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	670	18,000	ND	ND	ND	30	53	ND	ND	ND	ND	ND	ND
TRICHLOROETHYLENE	840	26	260	19,000	ND	39	82	140	230	ND	ND	ND	ND	ND	25

NOTE: ND = None Detected

1/ - Acetone is not an EPA priority pollutant

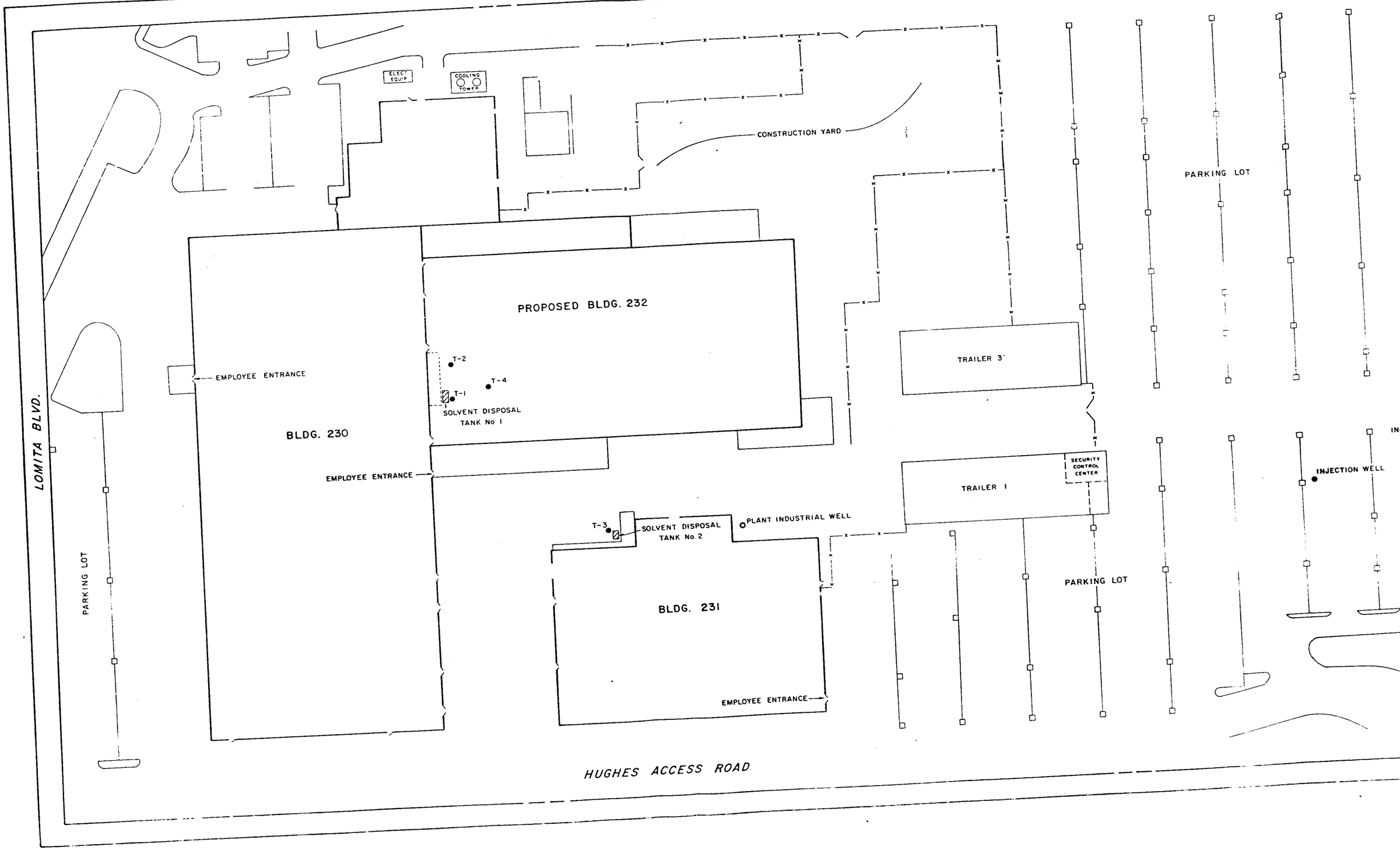
All samples analyzed by RADIAN CORPORATION, Sacramento, California

ILLUSTRATION

APPENDIX A

APPENDIX A

DRILLING OF TEST HOLES


ELECT EQUIP
COOLING TOWER
CONSTRUCTION YARD
PARKING LOT
PROPOSED BLDG. 232
T-2
T-4
T-1
SOLVENT DISPOSAL TANK No 1
EMPLOYEE ENTRANCE
BLDG. 230
EMPLOYEE ENTRANCE
TRAILER 3
TRAILER 1
SECURITY CONTROL CENTER
INJECTION WELL
T-3
SOLVENT DISPOSAL TANK No. 2
PLANT INDUSTRIAL WELL
BLDG. 231
EMPLOYEE ENTRANCE
PARKING LOT
PARKING LOT
LOMITA BLVD.
HUGHES ACCESS ROAD

APPENDIX A

DRILLING OF TEST HOLES

Four test holes were drilled to investigate potential soil contamination in the vicinity of the tanks. Test holes T-1, T-2, and T-4 were drilled near tank no. 1, and test hole T-3 was drilled near tank no. 2 (Figure 1). Test holes were drilled by the A & W Drilling Company of LaHabra, California, using the auger drilling method and a 24-inch diameter bucket auger bit. All test holes were drilled, backfilled, tamped, and capped with three inches of asphalt on June 1, 1983.

A lithologic log describing the geologic nature, relative moisture content, and odor of soil samples was compiled for each test hole (Tables A-1 through A-4). Soil samples were collected directly from the bottom of the bucket auger bit.

TABLE A-1

LITHOLOGIC LOG OF TEST HOLE T-1

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
0 - 0.5	Asphalt & Gravel Sub-base	Three-inch asphalt layer underlain by three-inch gravelly sand sub-base.
0.5- 4	Fill:	Sand, orange-brown; moist, dense, no solvent odor.
4 -10	Clay:	Grey-black, moist, firm to slightly stiff, no solvent odor.
		At 6.5 feet; slight solvent odor.
10 -11	Clayey Sand:	Grey to orange-brown; moist, approximately 20 percent clay, no apparent solvent odor.
11 -17	Sand:	Orange-brown; very moist, dense, very fine to fine-grained, slight solvent odor.
17 -25	Sand/ Clayey sand:	Orange-brown; oxidized, moist, dense, very fine to fine-grained, slight solvent odor.
		At 19 feet; moderate solvent odor.
		At 20 feet; wet, strong solvent odor.
25 -26	Sand:	Orange-brown; very moist to wet, fine to medium-grained, strong solvent odor.
26 -32	Sand/ Clayey Sand:	Very moist, strong solvent odor.
32 -36	Sand:	Light brown to buff; dry to slightly moist, loose to slightly dense, very fine to fine-grained, strong solvent odor.
		At 34 feet; decreasing solvent odor.
36 -38	Sandy clay/ Clayey Sand:	Brown to orange-brown; slightly moist, firm, slight solvent odor.

TABLE A-1 (continued)
LITHOLOGIC LOG OF TEST HOLE T-1

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
38-49	Sand:	Light brown; slightly moist, dense, very fine to fine-grained, slight to moderate solvent odor. At 40 feet; color change to light grey-brown. At 45 feet; slight solvent odor.

Total depth of borehole: 49 feet

REMARKS: Soil samples collected at depths of 5, 8, 10, 15, 17, 22, 31, 34.5, 39, and 49 feet below land surface.

TABLE A-2

LITHOLOGIC LOG OF TEST HOLE T-2

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 0.5	Asphalt & Gravel Sub-base:	Three-inch asphalt layer and three-inch gravelly sand sub-base.
0.5- 4	Fill:	Sand, orange brown; moist, no solvent odor.
4 -12	Clay:	Dark grey-black; moist, firm to stiff, cohesive, no solvent odor.
12 -19	Sand:	Light-brown to brown; dry to slightly moist, slightly dense, no solvent odor.
19 -22	Sand/ Clayey Sand:	Orange-brown; moist to very moist, dense, no odor.
22 -30	Sand:	Orange-brown to red-brown; moist to very moist, very fine to fine with some medium-grained, no odor.
		At 24 feet; fine to medium-grained, 5 to 10 percent clay.
		At 26 feet; light-brown to buff; very fine to fine-grained, no odor.

Total depth of borehole: 30 feet.

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

TABLE A-3

LITHOLOGIC LOG OF TEST HOLE T-3

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
0- 4	Fill:	Sand, orange-brown; moist, grading to wet near lower contact, slightly loose, no odor.
4- 7	Clay:	Dark grey-black; moist, firm to stiff, cohesive, no odor.
7-13	Clay/ Silty clay:	Dark grey-brown; slighly moist to moist, firm, no odor.
13-30	Sand:	Light-brown; slightly moist, slightly dense, very fine to fine-grained, no odor.
		At 20 feet; no odor.
		At 21 feet; grading to orange-brown; oxidized, 5 percent fines, very moist.
		At 23 feet; lens of fine to medium-grained sand.
		At 30 feet; no odor.

Total depth of borehole: 30 feet

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

TABLE A-4

LITHOLOGIC LOG OF TEST HOLE T-4

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 0.5	Asphalt & Gravel sub-base:	Three-inch asphalt layer and three-inches of gravel sub-base.
0.5 - 4	Fill:	Sand, orange brown; moist, slightly dense, no solvent odor.
4 - 11	Clay:	Dark grey-brown to black; moist, firm, no odor.
11 - 13	Sand/ Clayey sand:	Orange-brown to brown; no odor.
13 - 18	Sand:	Light-brown; slightly moist, slightly dense, no odor.
		At 17 feet; grading to orange-brown, 5 percent fines, moist.
18 - 21	Clayey sand/ Sand:	Orange-brown; moist, firm, 20 percent fines, no odor.
21 - 30	Sand:	Orange-brown; moist to very moist, 5 to 10 percent fines, no odor.
		At 24 feet; fine to medium-grained, moist.
		At 26 feet; yellow-brown; moist, very fine to fine, dense, no odor.

Total depth of borehole: 30 feet

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

APPENDIX B

APPENDIX B

DOCUMENTATION OF SOIL SAMPLING PROCEDURES

APPENDIX B

DESCRIPTION OF SOIL SAMPLING PROCEDURES

Twenty-five soil samples were collected from test holes T-1, T-2, T-3, and T-4 on June 1, 1983 (Table B-1). Fifteen of the samples were delivered to Radian Corporation in Sacramento, California, on June 2, 1983, for analyses of EPA priority volatile organic compounds and acetone (Table B-1). Samples were collected in 40 ml (milliliter) glass vials and one-pint glass mason jars. The 40 ml vials were sealed with a screw cap and teflon insert. Aluminium foil was placed on the top of each mason jar between the soil sample and the threaded lid. Electrical tape was wrapped around the top of each sample container. All samples were collected directly from the bucket auger bit. Samples were refrigerated in portable plastic ice chests until delivered to the laboratory approximately 18 to 24 hours after field collection of the samples.

TABLE B-1

SUMMARY OF SOIL SAMPLES

TEST HOLE IDENTIFIER AND SAMPLE DEPTH IN FEET

TEST HOLE T-1	TEST HOLE T-2	TEST HOLE T-3	TEST HOLE T-4
5*	10*	10*	10*
8*	15	15	15
10	20*	20*	20*
15	25	25	25
17	30*	30*	30*
22*			
31*			
34.5			
39*			
49*			

* SAMPLES SELECTED FOR LABORATORY ANALYSES.

D

D

August 29, 1983

INVESTIGATION OF GROUNDWATER QUALITY AND REGIONAL HYDROGEOLOGIC CONDITIONS HUGHES AIRCRAFT COMPANY ELECTRON DYNAMICS DIVISION TORRANCE, CALIFORNIA

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA

HARGIS & MONTGOMERY, INC.

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HARGIS & MONTGOMERY, INC.

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HARGIS & MONTGOMERY, INC.

INVESTIGATION OF GROUNDWATER QUALITY AND REGIONAL HYDROGEOLOGIC CONDITIONS HUGHES AIRCRAFT COMPANY ELECTRON DYNAMICS DIVISION TORRANCE, CALIFORNIA

INTRODUCTION

This report presents the results of investigation of groundwater quality and regional hydrogeologic conditions in the vicinity of the Hughes Aircraft Company, Electron Dynamics Division (the Plant) in Torrance, California. The objectives of this investigation were as follows:

1. Determine if groundwater beneath the Plant might be contaminated with organic compounds.

2. Investigate hydrogeologic conditions in the vicinity of the Plant.

3. Determine groundwater use and proximity of water wells constructed in the vicinity of the Plant site.

The scope of this investigation was based on the results of an investigation of subsurface soil conditions in the vicinity of two buried solvent storage tanks (Hargis & Montgomery, Inc., June 15, 1983). The initial investigation comprised the collection and laboratory analyses of soil samples obtained from four test holes drilled in the vicinity of two buried

tanks used for storage of used industrial solvents (Figure 1). Soil samples collected from these test holes were analyzed for EPA priority volatile organic compounds.

Results of the initial investigation of subsurface soil conditions indicated that volatile organic compounds detected in soils near tank no. 1 were among the organic compounds that had been stored in the tank for disposal over a period of several years. Organic compounds detected include tetrachloroethylene, trichloroethylene (TCE), and 1,1,1-trichloroethane (TCA). Results of the initial investigation also indicate that solvents probably have not leaked and/or spilled from solvent storage tank no. 2.

SITE CONDITIONS

Five test holes have been drilled to investigate subsurface conditions in the vicinity of tank no. 1 (Figure 1). Test holes T-1, T-2, and T-4 were drilled during the initial soils investigation (Hargis & Montgomery, Inc., June 15, 1983). Test holes T-5A and T-5B were drilled during the current investigation. Test hole T-5A was drilled to a depth of 80 feet, where limitations of the drilling equipment and adverse borehole conditions required abandonment of the hole. Test hole T-5B was then drilled to a total depth of 110 feet, about 10 feet below the water table, where a groundwater sample was collected.

Test hole T-3 was drilled near tank no. 2 during the initial soils investigation.

A lithologic log was compiled for each test hole describing the soils encountered (Appendix A, Tables A-1 through A-6). Approximately four feet of sandy fill was encountered at the surface in each of the test holes. The fill overlies a grey-black clay unit ranging in thickness from six to nine feet. The grey-black clay unit extends to depths of 11 to 13 feet below land surface. The clay unit is underlain by fine-grained sand with lenses of clayey sand to a depth of about 60 feet. The fine-grained sand layer extended to the maximum depth of 110 feet below land surface penetrated by test hole T-5B (Appendix A, Table A-6).

Solvent odors of varying strengths were detected in soils collected from test hole T-1 in the depth interval from about 11 to 49 feet. Solvent odors of varying strengths were consistently detected in soils collected from test hole T-5A in the depth interval from about 17 to 39 feet. Slight solvent odors were also detected in soils collected from depths of 49 and 60 feet at test hole T-5A. Solvent odors were detected in soil samples

collected at depths of 100 and 110 feet at test hole T-5B. Soil samples were not inspected above a depth of 80 feet at test hole T-5B. No solvent odors were detected in soil samples collected from test holes T-2, T-3, or T-4.

The water table was encountered in test hole T-5B at a depth of about 100 feet, which appears to be approximately the same as the depth to groundwater reported in the Plant industrial supply well (Figure 1).

CONCENTRATION OF ORGANIC COMPOUNDS IN SOIL SAMPLES

Fifteen soil samples collected from test holes T-1, T-2, T-3, and T-4 were transmitted to Radian Corporation, Sacramento, California, for analysis of volatile organic compounds during the initial investigation (Hargis & Montgomery, Inc., June 15, 1983). Four soil samples collected from test hole T-5A and one soil sample from test hole T-5B were transmitted to Brown and Caldwell, Analytical Services Division, Pasadena, California, for analysis of volatile organic compounds during the current investigation (Appendix B). Laboratory results indicate that 12 of the 31 EPA priority volatile organic compounds and acetone are present in soils beneath and adjacent to tank no. 1.

PREVIOUS RESULTS

Fifteen soil samples collected from four test holes were analyzed to determine concentrations of volatile organic compounds during the initial investigation (Hargis & Montgomery, Inc., June 15, 1983). Eleven organic compounds were detected in soil samples from test hole T-1 ranging in concentration from 21 to 440,000 µg/kg (micrograms per kilogram). Five organic compounds were detected in soil samples collected from test hole T-2, ranging in concentration from 20 to 230 µg/kg. The most common compounds detected included tetrachloroethylene, TCE, and TCA (Table 1). Two of the three soil samples collected from test hole T-3 did not contain any of the EPA priority volatile organic compounds. The third and deepest sample from test hole T-3 contained 28 µg/kg methylene chloride and 270 µg/kg tetrachloroethylene (Table 1). Concentrations less than 50 µg/kg of three of

the EPA priority volatile organic compounds were detected in soil samples collected from test hole T-4 (Table 1). Acetone was detected at concentrations ranging from 46 to 180 µg/kg in all soil samples analyzed from test hole T-4.

TEST HOLES T-5A AND T-5B

Test hole T-5A is located about 25 feet southeast of tank no. 1, and was drilled to a depth of about 80 feet using the bucket auger drilling method (Figure 1). Test hole T-5A was abandoned due to caving of the borehole, and backfilled with drill cuttings to land surface. Laboratory analyses were performed on soil samples collected at depths of 25, 30, 36, and 75 feet (Appendix B). The highest concentrations of most compounds were detected in the soil samples collected from the depth of 25 feet, including 66 µg/kg TCE and 34 µg/kg trans-1,2-dichloroethylene (Table 1). TCE was detected in three of the four soil samples. Concentrations of volatile organic compounds detected in the soil samples decreased rapidly below a depth of 25 feet. Other organic compounds detected in soil samples collected at test hole T-5A include: benzene, 1,1-dichloroethylene (DCE), TCA, tetrachloroethylene, and trichlorofluoromethane (Table 1).

Test hole T-5B is located about 40 feet southeast of tank no. 1, and was drilled to a depth of 110 feet (Figure 1). Test hole T-5B was drilled using the hollow-stem flight auger method. Test hole T-5B was drilled to replace test hole T-5A which could not be completed due to a caving borehole. A soil sample collected from test hole T-5B at a depth of 100 feet was analyzed for priority volatile organics (Appendix B). Four priority volatile organic compounds were detected, including 14 µg/kg TCE and 6 µg/kg tetrachloroethylene. The volatile organic compounds benzene and TCA were detected in the soil sample at a concentration of 2 µg/kg (Table 1).

SUMMARY

Twenty soil samples collected from six test holes drilled near solvent storage tank no. 1 and solvent storage tank no. 2 have been analyzed to determine concentrations of volatile organic compounds. Thirteen organic compounds were detected in soil samples collected from test holes drilled near tank no. 1. The highest concentrations of volatile organic compounds were detected in soil samples collected from test hole T-1, at depths of 22 and 31 feet (Table 1). The most common compounds detected included tetrachloroethylene, TCE, and TCA.

Results of laboratory analyses of soil samples collected from test holes T-5A and T-5B, drilled during the current investigation, generally confirm the results of the initial investigation. The most prevalent compounds detected in the initial investigation were also detected in soil samples collected during the current investigation. Concentrations of volatile organic compounds detected in soil samples appear to decrease rapidly below a depth of about 25 to 30 feet.

CHEMICAL CHARACTER OF GROUNDWATER SAMPLES

The chemical character of shallow groundwater beneath tank no. 1 has been defined by laboratory analyses of a groundwater sample collected from test hole T-5B (Figure 1). The chemical character of deeper groundwater occurring in the regional Silverado aquifer beneath the Plant was determined by laboratory analyses of a groundwater sample collected from the Plant industrial supply well. Chemical analyses have included determination of routine chemical constituents, selected trace metals, and EPA organic priority pollutants.

Analyses for routine constituents, trace metals, and priority organic pollutants were performed by Brown and Caldwell, Analytical Services Division, Pasadena, California. All water samples were collected and processed according to standard techniques (Appendix C).

TEST HOLE T-5B

Groundwater was encountered in test hole T-5B at a depth of approximately 100 feet. A bailed water sample was obtained when the water table was encountered (Appendix C).

Common Ions

Groundwater collected at test hole T-5B is a sodium bicarbonate type (Table 2). Sodium is the principal cation, and bicarbonate is the principal anion in solution. The concentration of nitrate in the water sample collected from test hole T-5B was 177 mg/l (milligrams per liter), which is higher than the EPA established drinking water limit of 45 mg/l (Table 2). The high nitrate concentration could be associated with historic agricul-

ture practices in the area. The total dissolved solids content of groundwater sampled at test hole T-5B was 705 mg/l.

Trace Metals

Trace metals detected in the water sample collected from test hole T-5B include 0.020 mg/l antimony, 0.014 mg/l arsenic, 0.004 mg/l thallium, and 0.09 mg/l manganese (Table 3). The concentration of manganese exceeds the EPA established limit of 0.05 mg/l for manganese in drinking water. Elevated concentrations of manganese are known to occur naturally in coastal southern California. The other trace metal concentrations are not high enough to be of concern.

Cyanide

The concentration of cyanide in the groundwater sample collected from test hole T-5B was 0.025 mg/l (Table 3). Although a drinking water limit for cyanide has not been established, a limit of 0.005 mg/l has been established for surface water containing aquatic life.

Organics

Volatile organic compounds detected in the water sample collected from test hole T-5B include 65 µg/l (micrograms per liter) TCE, 12 µg/l trichlorofluoromethane, 11 µg/l tetrachloroethylene, and 5 µg/l TCA (Table 3).

Phenol, at a concentration of 7 µg/l, was the only organic acid compound detected in the groundwater sample collected from test hole T-5B (Table 3). No organic priority base/neutral compounds or pesticides were detected.

Hexahydroazepinone, a non-priority compound, was detected at a concentration of 10 μg/l in the water sample collected from test hole T-5B (Table 3).

PLANT INDUSTRIAL SUPPLY WELL

The static depth to water at the Plant industrial supply well is reported to be about 100 feet. Water from the Plant well is used to operate a heat exchanger for industrial cooling.

Common Ions

Groundwater collected from the Plant well is also a sodium bicarbonate type. Sodium is the principal cation and bicarbonate is the principal anion in solution. The total dissolved solids content of the water sampled from the Plant well was 248 mg/l (Table 2).

Trace Metals

Iron and manganese were the only trace metals detected in the groundwater sample collected from the Plant well, at concentrations of 0.09 mg/l and 0.08 mg/l, respectively (Table 3).

Cyanide

No cyanide was detected in the water sample collected from the Plant well (Table 3).

Organics

Two volatile organic compounds were detected in the water sample collected from the Plant well. Chloroform was detected at a concentration of 12 μg/l, and trichlorofluoromethane was detected at 9 μg/l. These trihalomethanes could be associated with naturally occurring methane in the groundwater system and the chlorination of the Plant injection wells. Naturally occurring chloride could also combine with the methane to form the trihalomethanes.

No organic base/neutral compounds, acid compounds, or pesticides were detected in the water sample collected from the Plant industrial supply well.

SUMMARY

The chemical character of groundwater beneath solvent storage tank no. 1 and at the Plant industrial supply well were determined by laboratory analyses of water samples collected from test hole T-5B and the Plant well. Analytical results indicate that shallow groundwater beneath tank no. 1 is contaminated with several organic compounds, including 65 μg/l TCE. Low concentrations of trichlorofluoromethane and chloroform have been detected in a water sample collected from the Plant industrial supply well.

Nitrate and cyanide have been detected in groundwater samples collected at test hole T-5B. Cyanide was detected in the water sample collected from test hole T-5B at a concentration of 0.025 mg/l. Nitrate was detected at a concentration of 177 mg/l.

Manganese was detected in both water samples at concentrations greater than the EPA established limit for drinking water. However, high concentrations of manganese, due to natural hydrogeochemical processes, are common in coastal aquifers.

REGIONAL HYDROGEOLOGIC CONDITIONS

The Plant is located in the City of Torrance, California, and lies within the West Coast Basin, a sub-basin of the Coastal Plain of Los Angeles County. The Coastal Plain is underlain by a thick sequence of Quaternary and Tertiary age sediments which overlie a basement complex comprised of metamorphic and igneous rocks.

The West Coast Basin borders the Pacific Ocean and extends from Long Beach to Santa Monica and inland to the Newport-Inglewood uplift. Groundwater in the West Coast Basin is primarily produced from a series of alluvial aquifers occurring within the Lakewood and San Pedro Formations of Pleistocene age (Figure 2).

PRINCIPAL AQUIFERS

In the project area, the principal aquifers of concern appear to be the Gardena and Silverado aquifers. Both of these aquifers are areally extensive and heavily pumped in the West Coast Basin.

Gardena Aquifer

In the Plant area, the Gardena aquifer occurs from the water table to a depth of about 200 feet (Figures 3 and 4). This aquifer is about 100 feet thick and comprised of sand and gravel of the Upper Pleistocene Lakewood Formation.

In 1945, approximately 10 percent of the total groundwater pumped in the Torrance-Inglewood area was derived from the Gardena aquifer (Poland and others, 1959). Most of the groundwater pumped from the Gardena aquifer

has historically been used for irrigation and municipal supply (Poland and others, 1959).

In the 1940's, the chemical quality of groundwater in the Gardena aquifer ranged from poor to excellent (Poland and others, 1959). Data suggests that the upper portion of the Gardena aquifer has been historically poorer in quality than the deeper portions. Recent data on groundwater quality in the Plant area are not available. It appears that groundwater of useable quality occurs in the Gardena aquifer in the Plant area.

Silverado Aquifer

In the Plant area, the Silverado aquifer underlies the Gardena aquifer and is encountered at a depth of about 250 feet. Beneath the Plant, the two aquifers are separated by about 40 feet of clay. This clay unit appears to be present north, south, and west of the Plant and pinches out to the east (Figures 3 and 4). The two aquifers appear to merge east of the Plant.

The Silverado aquifer is the most heavily pumped aquifer in the Plant area. In 1945, approximately 90 percent of the total groundwater pumped in the Torrance-Inglewood area was derived from the Silverado aquifer (Poland and others, 1959). Nearly all industrial and municipal pumpage was from the Silverado aquifer. Wells currently pumping in the Plant area withdraw groundwater from the Silverado aquifer (California Department of Water Resources, 1982).

The chemical quality of groundwater occurring in the Silverado aquifer has historically been good to excellent in the Plant area (Poland and others, 1959). Recent data on groundwater quality in the Plant area are not available.

MOVEMENT OF GROUNDWATER

In the early 1900's, groundwater in the Plant area moved in a southeasterly direction and discharged into San Pedro Bay. Intense pumping of groundwater began in the 1920's and established several cones of depression east of the Plant. Groundwater in the Plant area moved east to southeast toward these pumping centers from the 1920's through the 1970's. Subsequent municipal and industrial pumpage in the Torrance-Gardena area has caused the direction of groundwater movement in the Plant area to shift to the northeast (Figure 5).

The depth to groundwater beneath the Plant is about 100 feet below land surface, or about 20 feet below mean sea level. Water levels in the Gardena and Silverado aquifers appear to be coincident in the immediate Plant area. Hydraulic communication between the two aquifers appears to be restricted by the clay unit beneath the Plant. This clay unit appears to thin and disappear east of the Plant, where the Gardena and Silverado aquifers are probably in direct hydraulic communication (Figure 4).

POTENTIAL IMPACT ON LOCAL WATER SUPPLIES

Analysis of groundwater samples collected from test hole T-5B, located 40 feet southeast of solvent storage tank no. 1, indicates that groundwater in the upper portion of the Gardena aquifer is contaminated with several organic compounds, cyanide, and nitrate. The Gardena aquifer occurs beneath the Plant at a depth of about 100 feet. Beneath the Plant, the Gardena and Silverado aquifers are separated by a clay unit. East of the Plant, the Gardena aquifer appears to merge with the Silverado aquifer. Most active wells in the Plant area withdraw groundwater from the Silverado aquifer. The direction of groundwater movement in the Plant area is to the northeast toward pumping depressions created by municipal wellfields operated by the cities of Torrance and Gardena (Figure 5).

PROXIMITY OF NEARBY WATER WELLS

A search of well records at the Los Angeles County Flood Control District, Los Angeles, California, indicates that 87 wells have been constructed within a two- to three-mile radius of the Plant (Figure 5). Almost 70 percent of these wells have been abandoned or have no record of use (Appendix D, Table D-1). Thirty-seven wells in the vicinity of the Plant have been abandoned by capping or destroying the well. Twenty-two wells have either no record of recent use or have not been classified as abandoned, and could still be useable (Appendix D, Table D-1).

The 28 remaining wells in the vicinity of the Plant have been used for irrigation, domestic, municipal or industrial supplies, and groundwater observation. According to District records, 14 of the wells are used by the Los Angeles County Flood Control District as groundwater observation wells, six have been used for irrigation, five wells serve as a domestic supply of water, two have been used for municipal supplies, and one for industrial supply.

The nearest well which has been used for irrigation is located about 500 feet southeast of the Plant and is identified as well 759C. The nearest domestic well is identified as well 758, and is located approximately 2,500 feet northwest of the Plant. Although there are no pumpage records for these wells for 1981-1982, these wells may still be operable.

GROUNDWATER USE

The closest active wells reporting pumpage are those operated by the City of Torrance, and are identified as wells 766A and 766B (Appendix D, Table D-1). The City of Torrance municipal wellfield is located about two miles north of the Plant (Figure 5). These wells are approximately 800 feet deep and are completed in the Silverado aquifer. Combined pumpage from wells 766A and 766B was 5,085 acre-feet during the year 1981-1982 (California Department of Water Resources, 1982).

Total pumpage for the Plant industrial supply well was 343 acre-feet during the year 1981-1982. A review of well records revealed that the Los Angeles County Flood Control District does not have a record of the Plant well. The well is recorded with the California Department of Water Resources. The State well number assigned to the Plant well by the California Department of Water Resources refers to a well located about 2,000 feet east of the Plant (California Department of Water Resources, 1982). The well is correctly identified as 759D (Appendix D, Table D-1).

There is no recorded pumpage from any other wells in the Plant area (California Department of Water Resources, 1982). Well owners are required by law to report any pumpage to the Watermaster for the West Coast Basin (personal communication, West Coast Basin Watermaster, July 1983).

REFERENCES CITED

California Department of Water Resources (DWR), 1982. Watermaster Service in the West Coast Basin, Los Angeles County, July 1, 1981-June 30, 1982.

Hargis & Montgomery, Inc., 1983. Investigation of soil conditions in the vicinity of buried tanks, Hughes Aircraft Company, Electron Dynamics Division, Torrance, California. June 15, 1983.

Los Angeles County Flood Control District, 1982. Map on file, "Coastal Plain, Groundwater Contours, Deep Aquifer, Well Location Map, Fall 1982". No. 2-ML225.

Personal communication, West Coast Basin Watermaster, July 1983.

Poland, J. F., Garret, A. A., and Sinnott, A., 1959. Geology, hydrology, and chemical character of groundwaters in the Torrance-Santa Monica area, California. United States Geological Survey Water Supply Paper #1461.

TABLES

CONCENTRATION OF VOLAT

ORGANIC COMPOUND (micrograms/kilogram)	TEST HOLE T-1 SAMPLE DEPTH, FEET						TEST HOLE T-2 SAMPLE DEPTH, FEET		
	5	8	22	31	39	49	11	20	30
ACETONE[1/]	82	64	ND	520	30	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	740	ND	ND	ND	ND	ND
CHLOROFORM	22	21	25	ND	ND	23	20	ND	22
1,1-DICHLOROETHYLENE	ND	ND	37	1,200	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	610	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	54	ND	59	340	72	ND	ND	ND	28
TETRACHLOROETHYLENE	780	300	8,600	440,000	62	69	25	ND	160
TOLUENE	ND	ND	550	1,200	ND	ND	ND	ND	ND
1,2-TRANS-DICHLOROETHYLENE	570	ND	23	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	670	18,000	ND	ND	ND	30	53
TRICHLOROETHYLENE	840	26	260	19,000	ND	39	82	140	230
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTE: ND = None Detected

1/ - Acetone is not an EPA priority pollutant

All samples from test holes T-1, T-2, T-3
analyzed by RADIAN CORPORATION, Sacramento

TABLE 1

CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN SOIL SAMPLES

T-1 H, FEET.....			TEST HOLE T-2 ....SAMPLE DEPTH, FEET.....			TEST HOLE T-3 ....SAMPLE DEPTH, FEET.....			TEST HOLE T-4 ....SAMPLE DEPTH, FEET.....		
31	39	49	11	20	30	10	20	30	10	20	30
520	30	ND	ND	ND	ND	ND	ND	ND	76	46	180
740	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	23	20	ND	22	ND	ND	ND	ND	ND	ND
200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
610	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
340	72	ND	ND	ND	28	ND	ND	28	ND	22	ND
000	62	69	25	ND	160	ND	ND	270	41	21	ND
200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
000	ND	ND	ND	30	53	ND	ND	ND	ND	ND	ND
00	ND	39	82	140	230	ND	ND	ND	ND	ND	25
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

All samples from test holes T-1, T-2, T-3, and T-4 were analyzed by RADIAN CORPORATION, Sacramento, California

TEST HOLE T-5A .....SAMPLE DEPTH, FEET.....				TEST HOLE T-5B SAMPLE DEPTH, FEET
25	30	36	75	100
ND	ND	ND	ND	ND
ND	ND	ND	ND	ND
ND	ND	ND	ND	ND
2	ND	ND	ND	ND
ND	ND	ND	ND	ND
ND	ND	ND	ND	ND
8	3	ND	ND	6
ND	ND	ND	ND	ND
34	ND	ND	ND	ND
ND	ND	ND	3	2
66	13	1	ND	14
ND	9	3	ND	2
ND	ND	8	7	ND

All samples from test holes T-5A and T-5B were analyzed by Brown and Caldwell, Analytical Services Division, Pasadena, California

TABLE 2

CONCENTRATION OF COMMON IONS IN GROUNDWATER SAMPLES

CONSTITUENT (milligrams per liter)	TEST HOLE T-5B	PLANT SUPPLY WELL
Sodium	198	94
Potassium	2.3	2.6
Calcium	81	31
Magnesium	25	11
Carbonate	0	0
Bicarbonate	328	290
Chloride	184	72
Sulfate	30	1.8
Nitrate (NO_3)	177	0.75
Total Dissolved Solids (evaporated @ 180°C)	705	248
Electrical Conductance (micromhos @ 25°C)	1,330	580

TABLE 3

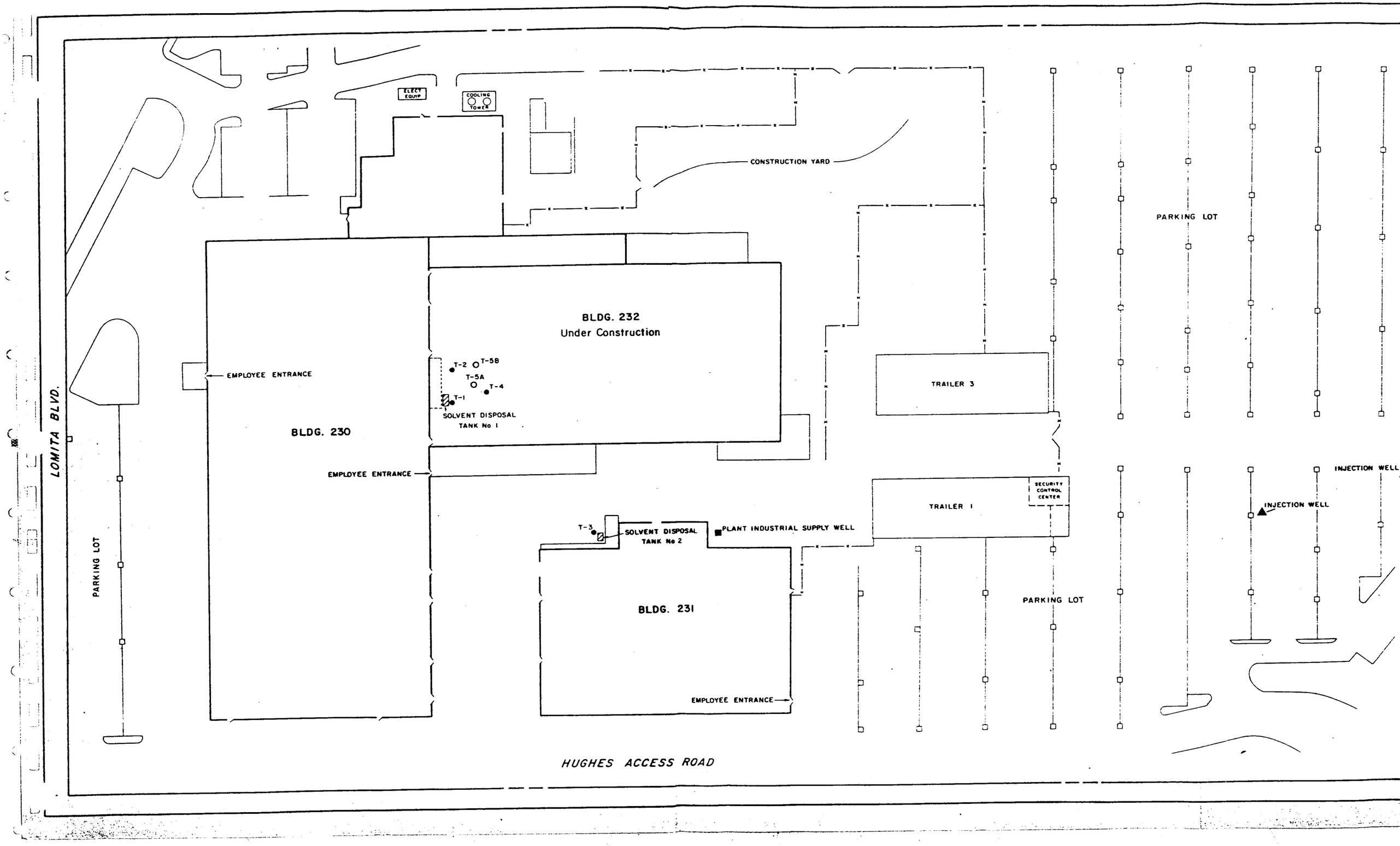
CONCENTRATION OF SELECTED ORGANIC COMPOUNDS,
TRACE METALS, AND CYANIDE DETECTED IN GROUNDWATER SAMPLES

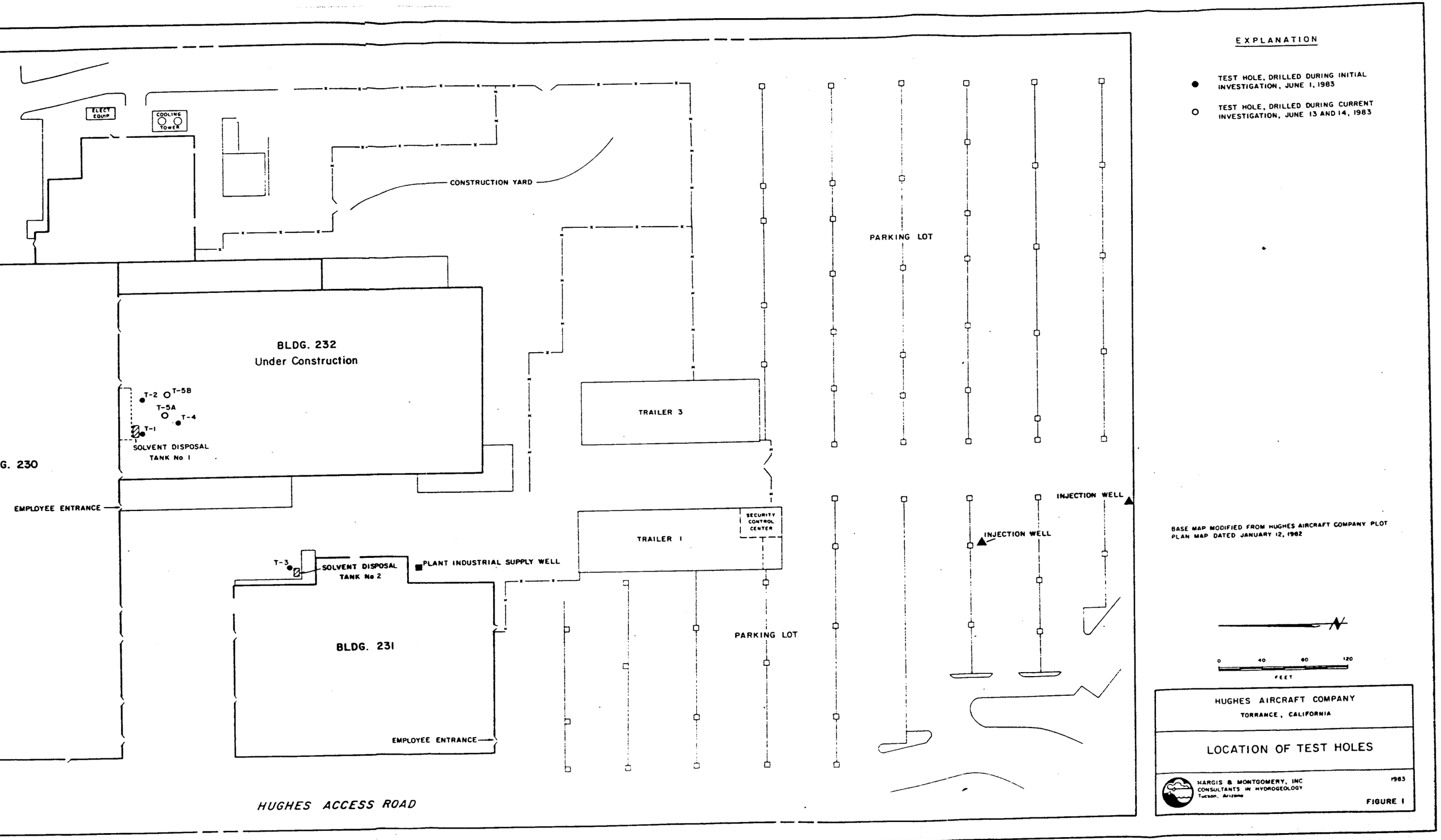
ORGANIC COMPOUNDS (micrograms per liter).	TEST HOLE T-5B	PLANT SUPPLY WELL
Trichloroethylene	65	ND
Trichlorofluoromethane	12	9
Chloroform	ND	12
Tetrachloroethylene	11	ND
1,1,1-Trichloroethane	5	ND
Phenol	7	ND
Hexahydroazepinone	10	ND
TRACE METALS AND CYANIDE (milligrams per liter)		
Thallium	0.004	ND
Antimony	0.020	ND
Arsenic	0.014	ND
Iron	ND	0.09
Manganese	0.09	0.08
Cyanide	0.025	ND

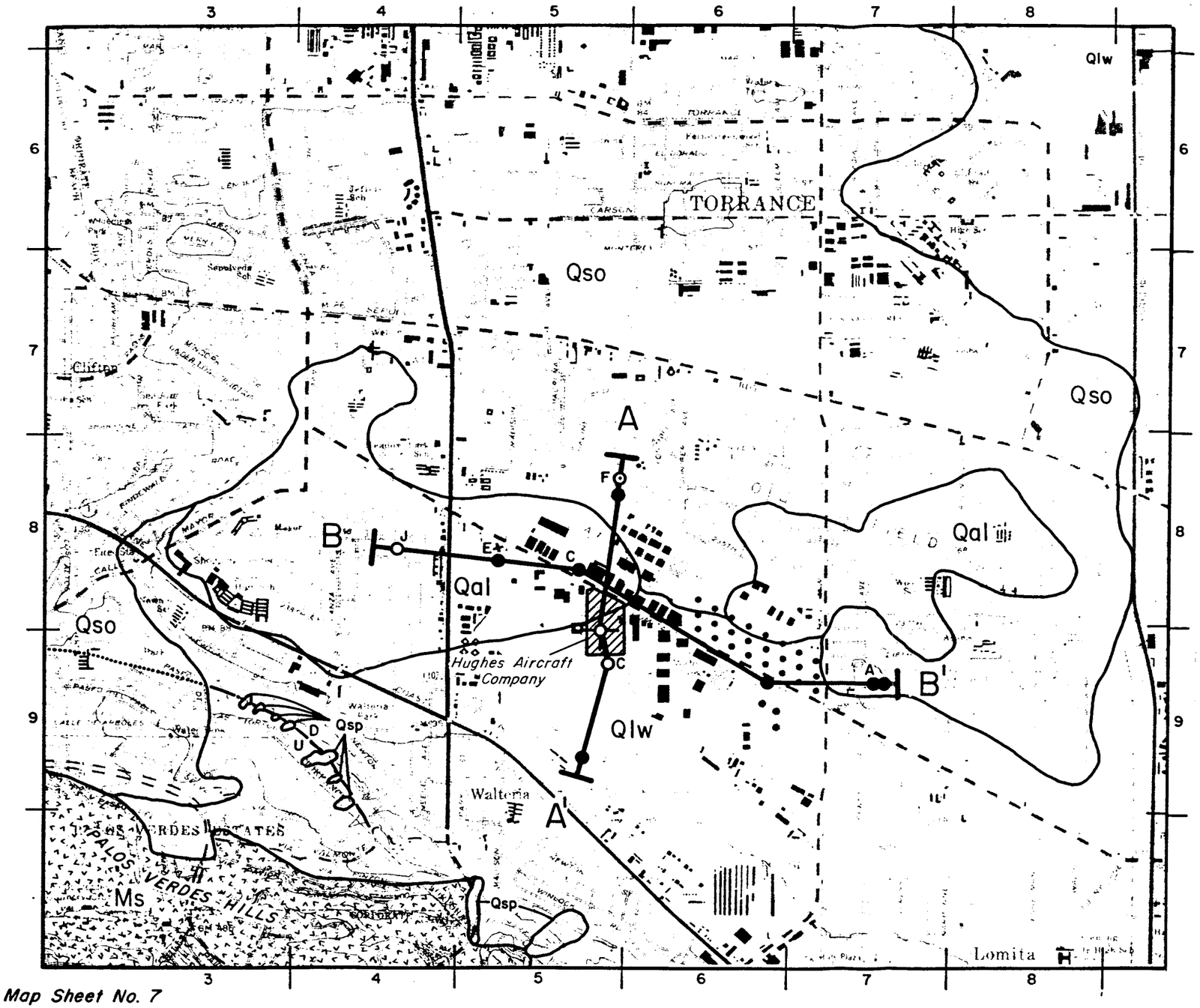
NOTE: ND = None Detected

Analyses performed by Brown and Caldwell,
Analytical Services Division, Pasadena, California

ILLUSTRATIONS


ELECT EQUIP
COOLING TOWER
CONSTRUCTION YARD
PARKING LOT
BLDG. 232
Under Construction
T-2
T-5B
T-5A
T-4
T-1
SOLVENT DISPOSAL TANK No 1
EMPLOYEE ENTRANCE
BLDG. 230
TRAILER 3
LOMITA BLVD.
EMPLOYEE ENTRANCE
SECURITY CONTROL CENTER
TRAILER 1
INJECTION WELL
INJECTION WELL
T-3
SOLVENT DISPOSAL TANK No 2
PLANT INDUSTRIAL SUPPLY WELL
PARKING LOT
BLDG. 231
PARKING LOT
EMPLOYEE ENTRANCE
HUGHES ACCESS ROAD


EXPLANATION
TEST HOLE, DRILLED DURING INITIAL INVESTIGATION, JUNE 1, 1983
TEST HOLE, DRILLED DURING CURRENT INVESTIGATION, JUNE 13 AND 14, 1983
ELECT EQUIP
COOLING TOWER
CONSTRUCTION YARD
PARKING LOT
BLDG. 232
Under Construction
T-2
T-5B
T-5A
T-4
T-1
SOLVENT DISPOSAL TANK No 1
G. 230
EMPLOYEE ENTRANCE
TRAILER 3
TRAILER 1
SECURITY CONTROL CENTER
INJECTION WELL
INJECTION WELL
T-3
SOLVENT DISPOSAL TANK No 2
PLANT INDUSTRIAL SUPPLY WELL
BLDG. 231
PARKING LOT
EMPLOYEE ENTRANCE
HUGHES ACCESS ROAD
BASE MAP MODIFIED FROM HUGHES AIRCRAFT COMPANY PLOT PLAN MAP DATED JANUARY 12, 1982
N
0 40 80 120
FEET
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA
LOCATION OF TEST HOLES
MARGIS & MONTGOMERY, INC
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona
1983
FIGURE 1



EXPLANAT

Holocene

Qal — RECENT ALLUVIAL DEPOSITS
Gravel, sand, silt, and clay. Coarser materials highly permeable.

UNCONFORMITY

Upper Pleistocene

Qso — OLDER DUNE SAND
Fine to medium sand with silt, and gravel lenses.

UNCONFORMITY

Qlw — LAKEWOOD FORMATION
Terrace cover sands, Palo Verdes sand, and other deposits consisting of silt, sand, and gravel. Moderately permeable.

LOCAL UNCONFORMITY

Lower Pleistocene

Qsp — SAN PEDRO FORMATION
Sand, gravel, silt, and clay, thick bodies of sand and gravel yield large quantities of water to wells.

UNCONFORMITY

Miocene

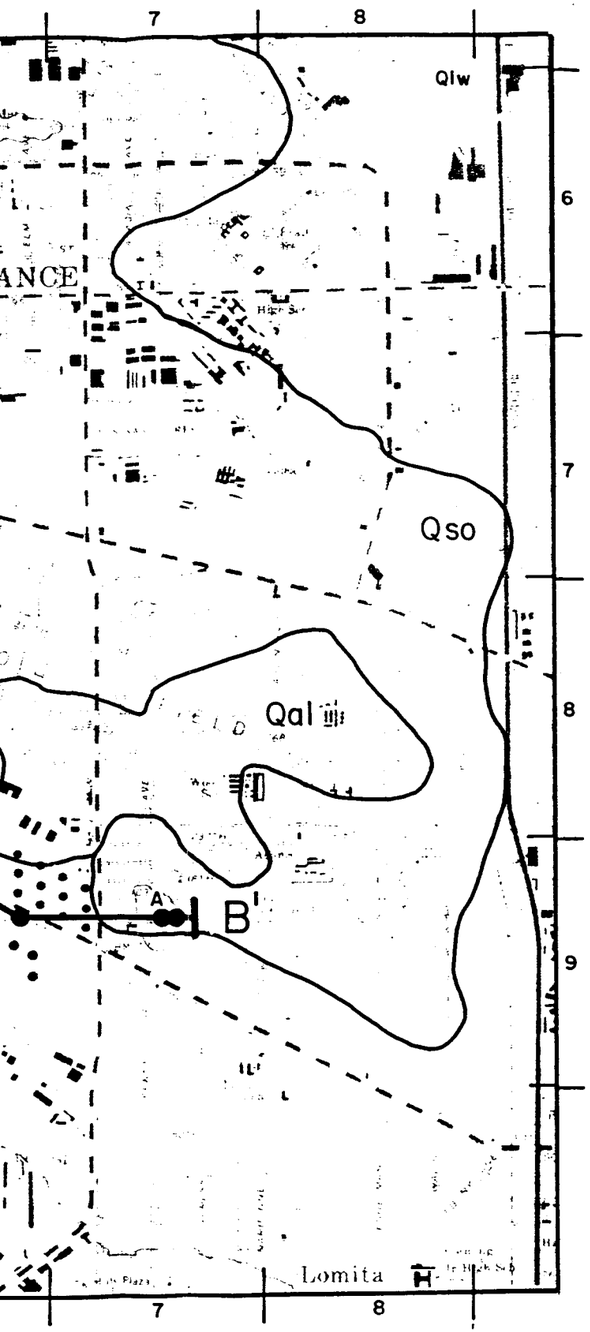
Ms — MONTEREY FORMATION
Mudstone, diatomite, and mudstone.

TERTIARY

— D/U ····· TRACE OF FAULT
Dashed where inferred, dotted where concealed by deposits of Recent Age; U, upthrown side; D, downthrow

——— CONTACT

NOTE: BASE MAP MODIFIED FROM POLAND AND OTHERS, 195



EXPLANATION

QUATERNARY

Holocene

Qal — RECENT ALLUVIAL DEPOSITS
Gravel, sand, silt, and clay. Coarser materials highly permeable.

UNCONFORMITY

Upper Pleistocene

Qso — OLDER DUNE SAND
Fine to medium sand with silt, and gravel lenses.

UNCONFORMITY

Qlw — LAKEWOOD FORMATION
Terrace cover sands, Palo Verdes sand, and other deposits consisting of silt, sand, and gravel. Moderately permeable.

LOCAL UNCONFORMITY

Lower Pleistocene

Qsp — SAN PEDRO FORMATION
Sand, gravel, silt, and clay, thick bodies of sand and gravel yield large quantities of water to wells.

UNCONFORMITY

TERTIARY

Miocene

Ms — MONTEREY FORMATION
Mudstone, diatomite, and mudstone.

TRACE OF FAULT
D / U
Dashed where inferred, dotted where concealed by deposits of Recent Age; U, upthrown side; D, downthrown side.

CONTACT

NOTE: BASE MAP MODIFIED FROM POLAND AND OTHERS, 1959.

WELLS

- ABANDONED
- TEST HOLE, NEVER PUMPED
- NO RECORD OF ABANDONMENT
- WELL PUMPED

Sources: L.A.C.F.C.D. Well Records and California Dept. of Water Resources Watermaster Report, 1982

A — A'
LINE OF CROSS SECTION

Map Sheet and Grid numbers refer to L.A.C.F.C.D. Well Numbering System. (Refer to Appendix D, Figure D-1)

0 2,000 4,000
FEET

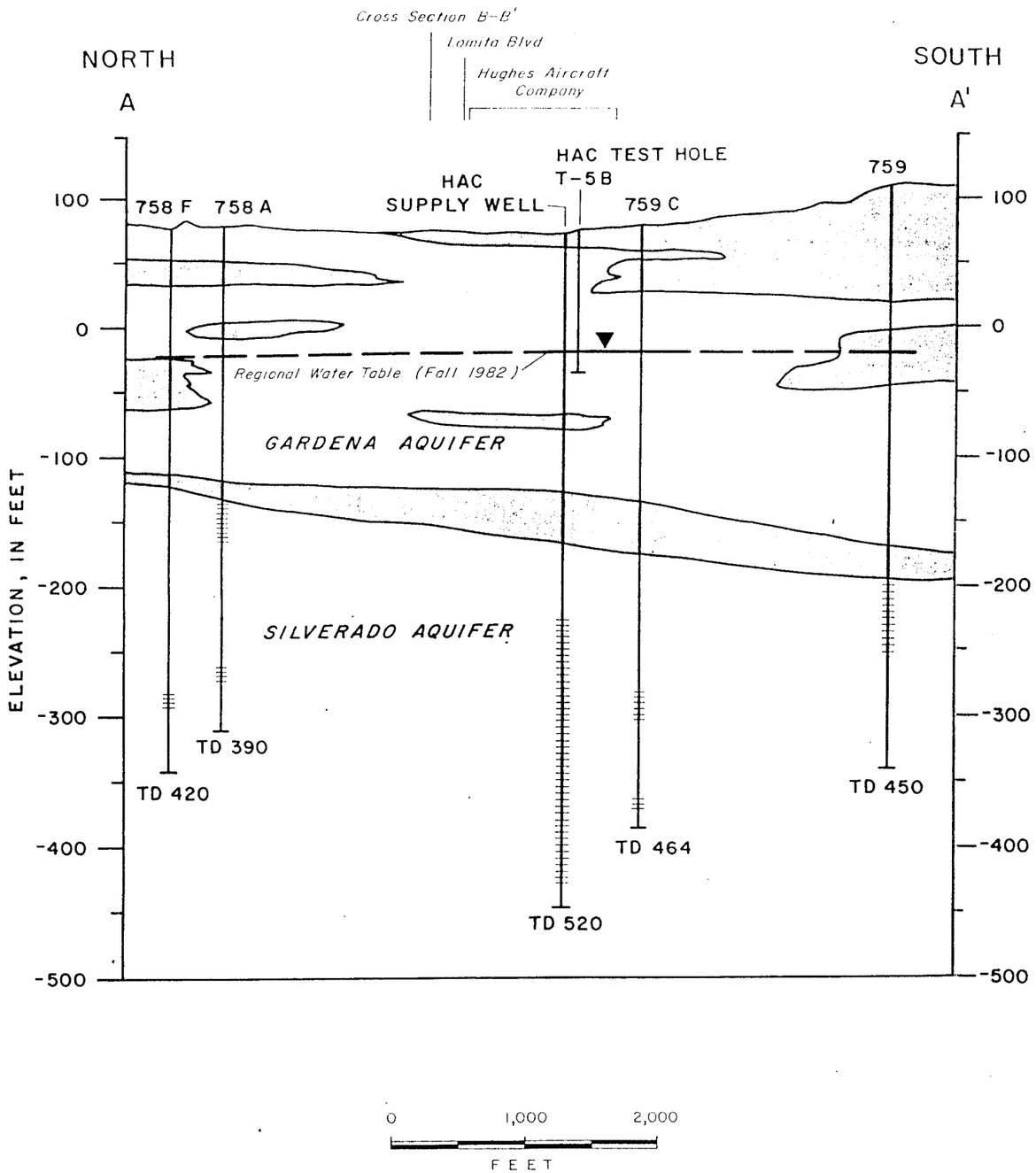
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

GEOLOGIC MAP

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 2



EXPLANATION

SAND
Predominately sand with some gravel and clay lenses. Moderate to high permeability.

CLAY
Predominately clay and silt with localized sand lenses. Low permeability.

Well Location

759 C — IDENTIFIER
Well numbering system used by L.A.C.F.C.D., Los Angeles, California (Refer to Appendix D, Figure D-1)

PERFORATED INTERVAL

TD 464 — TOTAL DEPTH

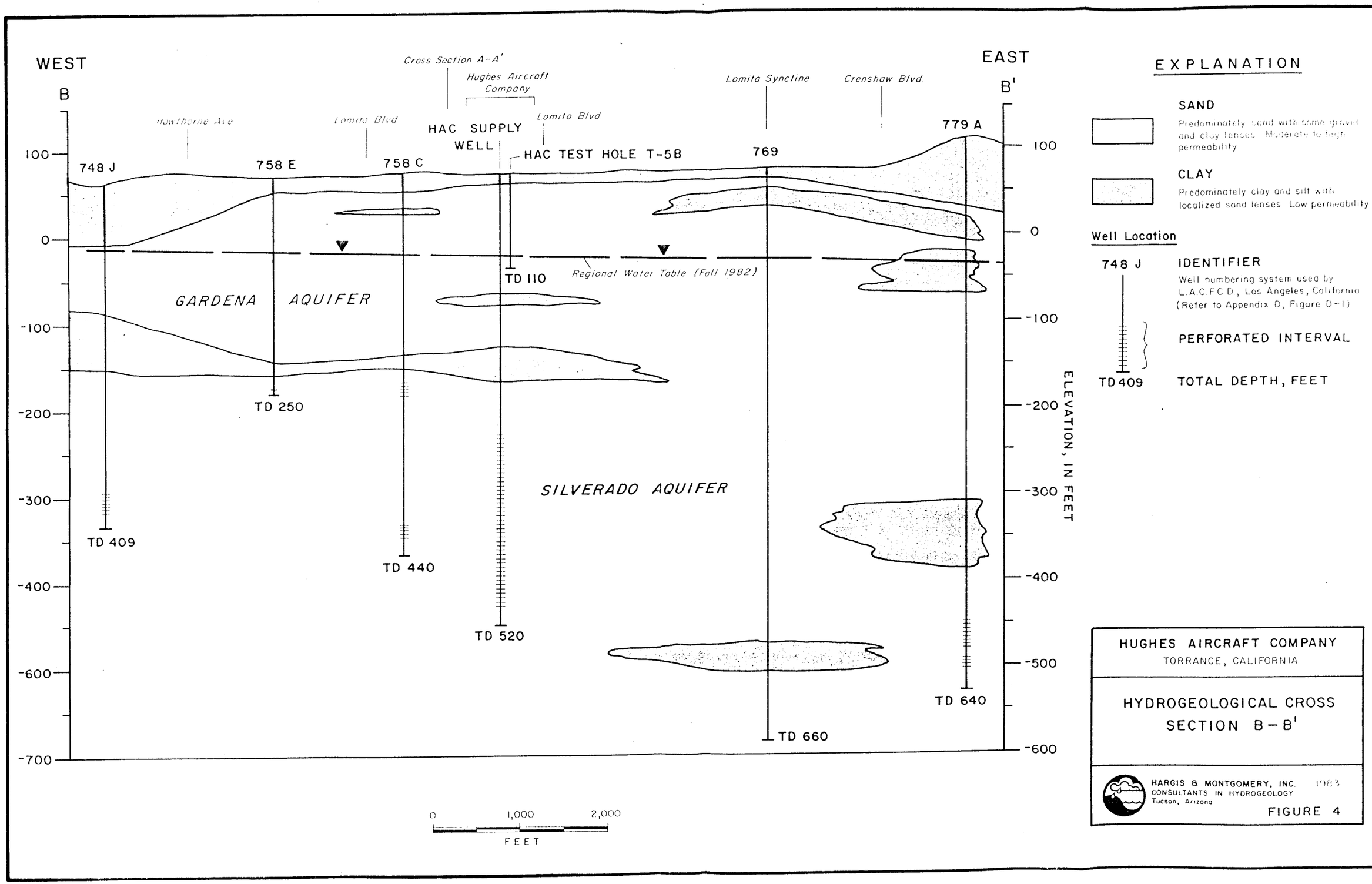
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

HYDROGEOLOGICAL CROSS SECTION A–A'

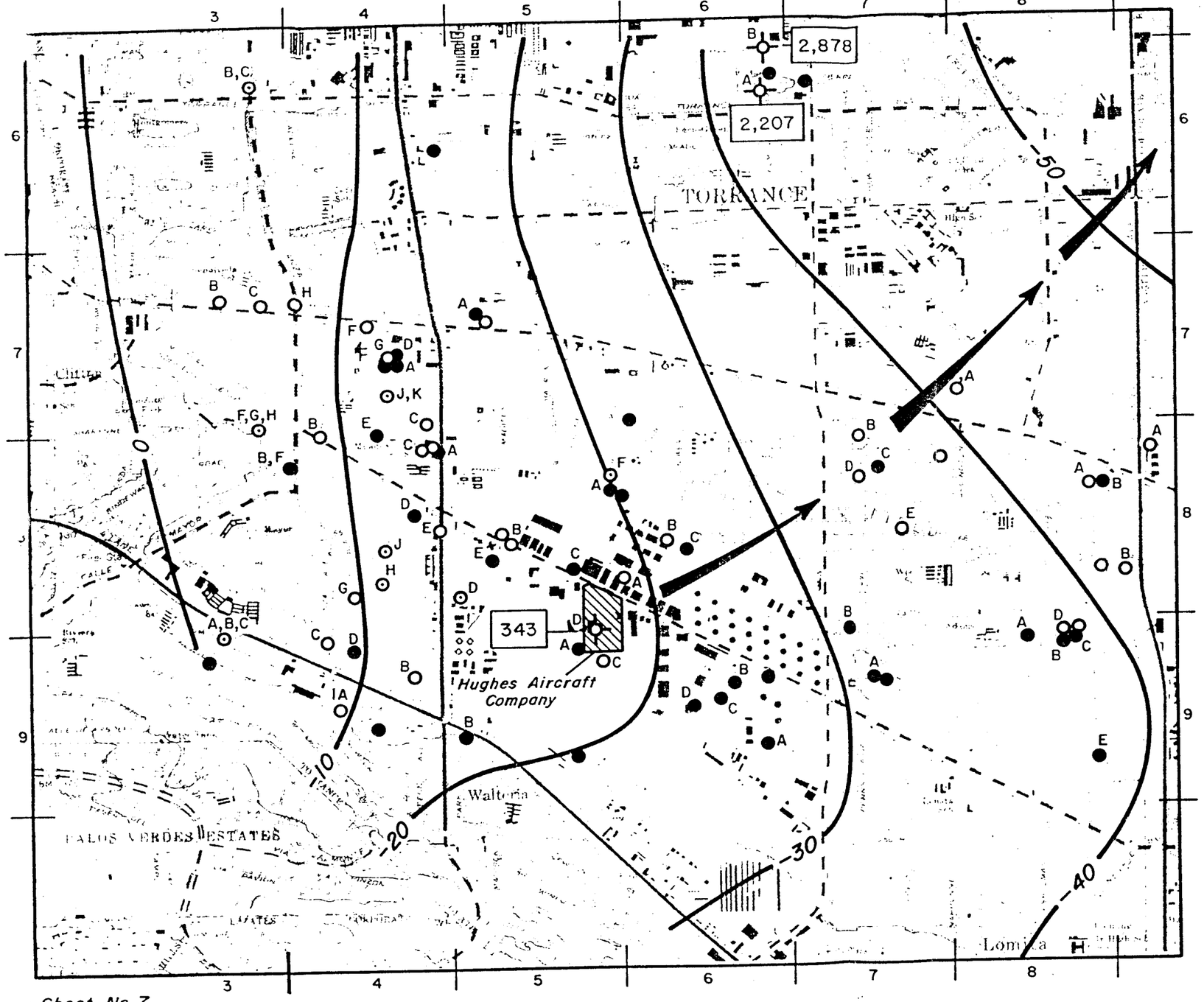
HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 3


WEST
B
EAST
B'
Cross Section A-A'
Hughes Aircraft Company
Hawthorne Ave
Lomita Blvd
HAC SUPPLY WELL
Lomita Blvd
HAC TEST HOLE T-5B
Lomita Syncline
Crenshaw Blvd.
748 J
758 E
758 C
769
779 A
TD 110
Regional Water Table (Fall 1982)
GARDENA AQUIFER
TD 250
TD 409
TD 440
SILVERADO AQUIFER
TD 520
TD 660
TD 640
100
0
-100
-200
-300
-400
-500
-600
-700
ELEVATION, IN FEET
0
1,000
2,000
FEET
EXPLANATION
SAND
Predominately sand with some gravel and clay lenses. Moderate to high permeability
CLAY
Predominately clay and silt with localized sand lenses. Low permeability
Well Location
748 J
IDENTIFIER
Well numbering system used by L.A.C.F.C.D., Los Angeles, California (Refer to Appendix D, Figure D-1)
PERFORATED INTERVAL
TD409
TOTAL DEPTH, FEET
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA
HYDROGEOLOGICAL CROSS SECTION B-B'
HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona
FIGURE 4

Total City of Torrance Pumpage: 6,145 Acre Feet in 1981–82



EXPLANATION

WELLS

- ABANDONED
- TEST HOLE, NEVER PUMPED
- NO RECORD OF ABANDONMENT
- WELL PUMPED DURING 1981–82
- 2,207 PUMPAGE IN ACRE FEET

—30— WATER LEVEL CONTOUR IN SILVERADO AQUIFER FALL 1982 (From L.A.C.F.C.D., 1982) Minus indicates elevation in feet below Mean Sea Level

DIRECTION OF GROUNDWATER MOVEMENT IN SILVERADO AQUIFER

Map Sheet and Grid numbers refer to L.A.C.F.C.D. Well Numbering System (Refer to Appendix D, Figure D-1)

Data obtained from: L.A.C.F.C.D. Well Records and California Dept. of Water Resources Watermaster Report, 1982

0 2,000 4,000
FEET

HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

REGIONAL WATER LEVEL CONTOURS FALL 1982

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 5

Sheet No. 7

APPENDIX A

HARGIS & MONTGOMERY, INC.

APPENDIX A

DRILLING OF TEST HOLES

2-14-86

CAD041666819

To Whom It May Concern:

During a recent TSCD inspection of the Torrance site of Hughes Aircraft Co by Carol J. Masson it was identified that the information which was sent to DOHS in 1983 concerning solvent tank and barrel yard removal had been misplaced. The purpose of this letter is to update you as requested concerning past rearrangement and construction projects at this facility.

1. To facilitate the construction of a new bldg at this site (bldg 232) the barrel yard and solvents tank which were identified on our 1981 Operation Plan were removed in early 1983
   All environmental sampling as required was accomplished. Samples of soil as well as wipe samples of concrete were taken and analyzed. Once the results proved that these areas were not contaminated, demolition began in preparation for the new structure. As per regulations, the tanks were manifested and disposed of.
   A 263,400 sq. ft. structure now sets where the barrel yard and one of the two waste solvent tanks originally were located.
   A 14" concrete foundation was constructed over the area where the second waste solvent tank was located.
   We now have no in-ground hazardous waste tanks.
2. The attached bulletin identifies that the Electron Dynamics Division of Hughes Aircraft was split into two divisions in April of 1984. Product lines and structures were unaffected.

Sincerely,
Timothy Barry
Environmental Health &Safety Engineer

Timothy Barry

rcvd 2-21-86

HARGIS & MONTGOMERY, INC.

APPENDIX A

CONTENTS

	Page
DRILLING OF TEST HOLES	A-1

TABLES

Table	
A-1	LITHOLOGIC LOG OF TEST HOLE T-1
A-2	LITHOLOGIC LOG OF TEST HOLE T-2
A-3	LITHOLOGIC LOG OF TEST HOLE T-3
A-4	LITHOLOGIC LOG OF TEST HOLE T-4
A-5	LITHOLOGIC LOG OF TEST HOLE T-5A
A-6	LITHOLOGIC LOG OF TEST HOLE T-5B

APPENDIX A

DRILLING OF TEST HOLES

Six test holes were drilled to investigate the subsurface conditions in the immediate vicinity of the solvent disposal tanks. Test holes T-1 through T-4 were drilled during the initial investigation. Test holes T-5A and T-5B were drilled during the current investigation.

Test holes T-1, T-2, T-4, T-5A, and T-5B were drilled near tank no. 1, and test hole T-3 was drilled near tank no. 2 (Figure 1). All test holes, except test hole T-5B, were drilled by the A & W Drilling Company of La Habra, California, using the bucket auger drilling method and a 24-inch diameter auger bit. Test hole T-5B was drilled by California Testing Laboratories, Inc. of Long Beach, California, using the hollow-stem flight auger drilling method and six-inch diameter augers. Test holes T-1, T-2, T-3, and T-4 were drilled, backfilled, tamped, and capped with three inches of asphalt on June 1, 1983. Test hole T-5A was drilled, backfilled, and tamped on June 13, 1983. Test hole T-5B was drilled, backfilled, and tamped on June 14, 1983. Both holes were capped with three inches of asphalt.

A lithologic log describing the geologic nature, relative moisture content, and odor of soil samples was compiled for each test hole (Tables A-1 through A-6). Soil samples were collected directly from the bottom of the bucket auger bit or flight auger blades.

TABLE A-1

LITHOLOGIC LOG OF TEST HOLE T-1

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
0 - 0.5	Asphalt & Gravel Sub-base	Three-inch asphalt layer underlain by three-inch gravelly sand sub-base.
0.5- 4	Fill:	Sand, orange-brown; moist, dense, no solvent odor.
4 -10	Clay:	Grey-black, moist, firm to slightly stiff, no solvent odor.
		At 6.5 feet; slight solvent odor.
10 -11	Clayey Sand:	Grey to orange-brown; moist, approximately 20 percent clay, no apparent solvent odor.
11 -17	Sand:	Orange-brown; very moist, dense, very fine to fine-grained, slight solvent odor.
17 -25	Sand/ Clayey sand:	Orange-brown; oxidized, moist, dense, very fine to fine-grained, slight solvent odor.
		At 19 feet; moderate solvent odor.
		At 20 feet; wet, strong solvent odor.
25 -26	Sand:	Orange-brown; very moist to wet, fine to medium-grained, strong solvent odor.
26 -32	Sand/ Clayey Sand:	Very moist, strong solvent odor.
32 -36	Sand:	Light brown to buff; dry to slightly moist, loose to slightly dense, very fine to fine-grained, strong solvent odor.
		At 34 feet; decreasing solvent odor.
36 -38	Sandy clay/ Clayey Sand:	Brown to orange-brown; slightly moist, firm, slight solvent odor.

TABLE A-1 (continued)
LITHOLOGIC LOG OF TEST HOLE T-1

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
38-49	Sand:	Light brown; slightly moist, dense, very fine to fine-grained, slight to moderate solvent odor. At 40 feet; color change to light grey-brown. At 45 feet; slight solvent odor.

Total depth of borehole: 49 feet

REMARKS: Soil samples collected at depths of 5, 8, 10, 15, 17, 22, 31, 34.5, 39, and 49 feet below land surface.

TABLE A-2

LITHOLOGIC LOG OF TEST HOLE T-2

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 0.5	Asphalt & Gravel Sub-base:	Three-inch asphalt layer and three-inch gravelly sand sub-base.
0.5- 4	Fill:	Sand, orange brown; moist, no solvent odor.
4 -12	Clay:	Dark grey-black; moist, firm to stiff, cohesive, no solvent odor.
12 -19	Sand:	Light-brown to brown; dry to slightly moist, slightly dense, no solvent odor.
19 -22	Sand/ Clayey Sand:	Orange-brown; moist to very moist, dense, no odor.
22 -30	Sand:	Orange-brown to red-brown; moist to very moist, very fine to fine with some medium-grained, no odor.
		At 24 feet; fine to medium-grained, 5 to 10 percent clay.
		At 26 feet; light-brown to buff; very fine to fine-grained, no odor.

Total depth of borehole: 30 feet.

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

TABLE A-3

LITHOLOGIC LOG OF TEST HOLE T-3

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
0- 4	Fill:	Sand, orange-brown; moist, grading to wet near lower contact, slightly loose, no odor.
4- 7	Clay:	Dark grey-black; moist, firm to stiff, cohesive, no odor.
7-13	Clay/ Silty clay:	Dark grey-brown; slighly moist to moist, firm, no odor.
13-30	Sand:	Light-brown; slightly moist, slightly dense, very fine to fine-grained, no odor.
		At 20 feet; no odor.
		At 21 feet; grading to orange-brown; oxidized, 5 percent fines, very moist.
		At 23 feet; lens of fine to medium-grained sand.
		At 30 feet; no odor.

Total depth of borehole: 30 feet

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

TABLE A-4

LITHOLOGIC LOG OF TEST HOLE T-4

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 0.5	Asphalt & Gravel sub-base:	Three-inch asphalt layer and three-inches of gravel sub-base.
0.5 - 4	Fill:	Sand, orange brown; moist, slightly dense, no solvent odor.
4 - 11	Clay:	Dark grey-brown to black; moist, firm, no odor.
11 - 13	Sand/ Clayey sand:	Orange-brown to brown; no odor.
13 - 18	Sand:	Light-brown; slightly moist, slightly dense, no odor.
		At 17 feet; grading to orange-brown, 5 percent fines, moist.
18 - 21	Clayey sand/ Sand:	Orange-brown; moist, firm, 20 percent fines, no odor.
21 - 30	Sand:	Orange-brown; moist to very moist, 5 to 10 percent fines, no odor.
		At 24 feet; fine to medium-grained, moist.
		At 26 feet; yellow-brown; moist, very fine to fine, dense, no odor.

Total depth of borehole: 30 feet

REMARKS: Soil samples collected at depths of 10, 15, 20, 25, and 30 feet below land surface.

TABLE A-5

LITHOLOGIC LOG OF TEST HOLE T-5A

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 0.5	Asphalt & Gravel Sub-base	Three-inch asphalt layer underlain by gravelly sand sub-base.
0.5- 3.5	Fill:	Sand, light brown to light orange brown, slightly moist to very moist, slightly dense, very fine grained, no odor.
3.5-12	Clay:	Charcoal black, moist, firm, very cohesive, no odor.
		At 5.5 feet; slight solvent odor.
		At 6 feet; dark brown, no odor.
		At 10 feet; brown, some sand, no odor.
12 -17	Clayey Sand:	Light brown to orange brown, slightly moist, slightly dense, 10-15 percent fines, no odor.
17 -21	Clayey Sand/ Sandy Clay:	Light brown to orange brown, moist, firm, slight solvent odor.
21 -26	Sand/Clayey Sand:	Orange brown, moist, dense, slight solvent odor.
		At 24 feet; fine to medium grained with 10 to 15 percent fines.
		At 25 feet; increase in clay content.
26 -28	Sand:	Yellow brown to orange brown, moist, dense, very fine to fine grained, 5 to 10 percent fines, slight solvent odor.
		At 27 feet; increase in moisture content.
28 -37	Sand:	Yellow brown to buff, moist, dense, very fine grained, less than 5 percent fines.
		At 31 feet; increase in moisture content.
		At 33 feet; light yellow brown color.

TABLE A-5 (continued)
LITHOLOGIC LOG OF TEST HOLE T-5A

DEPTH INTERVAL (feet)		DESCRIPTION OF MATERIAL
		At 34 feet; moderate solvent odor.
		At 36 feet; abundance of clay balls in sand.
37 -39	Sandy Clay:	Brown with some orange brown, moist, firm, slightly cohesive, slight solvent odor.
39 -41	Sand:	Light brown to orange brown, moist, slightly dense, very fine grained, no solvent odor.
41 -53	Sand:	Light brown to tan, slightly moist, very fine, less than 5 percent fines.
		At 43 feet; increase in moisture content, very fine sand.
		At 45 feet; moist, moderate oxidation, no solvent odor.
		At 47 feet; dense, no odor.
		At 48 feet; increase in silt content.
		At 49 feet; slight solvent odor.
53 -57	Sand/ Clayey Sand:	Light orange brown, moist, dense, 5 to 10 percent fines, no odor.
		At 55 feet; some grey color.
57 -80	Sand:	Light orange brown, moist, dense, very fine.
		At 60 feet; slight solvent odor.
		At 65 feet; small clay balls in sand.
		At 75 feet; light brown to buff, no odor.

Total depth of borehole: 80 feet

REMARKS: Soil samples were collected at depths of 25, 30, 36, 60, and 75 feet below land surface. Borehole caving problems persisted in the depth interval 60 to 80 feet using the bucket auger drilling method.

TABLE A-6

LITHOLOGIC LOG OF TEST HOLE T-5B

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL	
0 - 80	See Log of Test Hole T-5A.	
80 -110	Sand:	Light brown to buff, dense, very fine to fine grained.
		At 80 to 100 feet; moist, no solvent odor.
		At 100 feet; increase in moisture content, moderate solvent odor.
		At 110 feet; wet, moderate solvent odor.

Total depth of borehole: 110 feet

REMARKS: A soil sample was collected at a depth of 100 feet. Water samples were collected at a depth of 110 feet by lowering a bailer inside the hollow stem flight augers.

APPENDIX B

HARGIS & MONTGOMERY, INC.

APPENDIX B

SOIL SAMPLING PROCEDURES

APPENDIX B

DOCUMENTATION OF SOIL SAMPLING PROCEDURES

Twenty-five soil samples were collected from test holes T-1, T-2, T-3, and T-4 on June 1, 1983. Fifteen of the samples were delivered to Radian Corporation in Sacramento, California on June 2, 1983 for analysis of EPA priority volatile organic compounds and acetone (Table 1). Five soil samples were collected from test holes T-5A and T-5B on June 13 and 14, 1983 and delivered to Brown and Caldwell, Analytical Services Division, Pasadena, California on June 14, 1983 for analysis of EPA priority volatile organic compounds and acetone (Table 1).

Samples were collected in 40 ml (milliliter) glass vials and one-pint glass mason jars. The 40 ml vials were sealed with a screw cap and teflon insert. Aluminum foil was placed on the top of each mason jar between the soil sample and the threaded lid. Electrical tape was wrapped around the top of each sample container. All samples were collected directly from the bucket auger bit or flight auger blades. Samples were refrigerated in portable plastic ice chests and delivered to the laboratory within 24 hours after collection.

APPENDIX C

HARGIS & MONTGOMERY, INC.

APPENDIX C

WATER SAMPLING PROCEDURES

APPENDIX C

WATER SAMPLING PROCEDURE

Water samples from one test hole and one Plant industrial supply well were collected on June 13 and 14, 1983. The water samples were analyzed for routine chemical constituents, selected trace metals, and EPA priority organic compounds.

COLLECTION OF WATER SAMPLES

The test hole drilled at the Plant was sampled by bailing. The bailing equipment consisted of a two-foot length of two-inch PVC pipe capped at the bottom and attached to a thin nylon twine. The PVC bailer was thoroughly cleaned and rinsed before sampling. The PVC bailer was lowered to the bottom of the test hole and a water sample was lifted to the surface.

A vertical turbine pump is installed in the Plant industrial supply well. The water sample was obtained from a tap at the wellhead while the well was pumping.

Samples for Routine Constituents

Water samples for analysis of routine constituents were collected in one-quart polyethylene bottles. The bottles were rinsed with bailed or pumped water prior to sample collection.

Samples for Trace Metals

Water samples for analysis of trace metals were collected in one-quart polyethylene bottles. Bottles were rinsed with bailed or pumped water before sampling. Samples for trace metal analyses were filtered by the laboratory through 0.45 micron millipore filters and acidified with 1:1 nitric acid.

Samples for Organic Constituents

Water samples for analysis of volatile organic compounds were collected in 40 ml glass vials with teflon-lined threaded caps. Duplicate samples were collected from each well. All vials were completely filled with water. The teflon liner was placed on the vial in a manner which expels any residual air. All water samples for volatile organic analysis were refrigerated until the analyses were performed.

Water samples for analysis of organic base/neutral compounds, acid compounds, and pesticides were collected in one-gallon glass bottles and sealed with a teflon-lined threaded cap. Gallon samples were refrigerated until the analyses were performed.

Shipment of Samples

Water samples were collected on June 13 and 14, 1983 and delivered to Brown and Caldwell, Analytical Services Division, Pasadena, California on June 14, 1983. All samples for analysis of organic compounds were stored on ice.

APPENDIX D

HARGIS & MONTGOMERY, INC.

APPENDIX D

SUMMARY OF REGIONAL WELL DATA

HARGIS & MONTGOMERY, INC.

APPENDIX D

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TABLE D-1

SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
736B	4S/14W-8J1	1968	L.A.C.F.C.D.[1/]	G.W.[2/] Observation	In Use	670	590 - 630
736C	4S/14W-8J2	1968	L.A.C.F.C.D.	G.W. Observation	In Use	670	240 - 490
737B	4S/14W-17H1	1944	California Water Service Co.	Domestic	In Use	456	192 - 456
737C	4S/14W-17H2	1947	California Water Service Co.	Domestic	In Use	456	192 - 456
737F	4S/14W-17R1	1968	L.A.C.F.C.D.	G.W. Observation	In Use	673	500 - 590
737G	4S/14W-17R2	1968	L.A.C.F.C.D.	G.W. Observation	In Use	673	210 - 405
737H	4S/14W-17R3	1968	L.A.C.F.C.D.	G.W. Observation	In Use	673	150 - 180
739	4S/14W-20N7	1928	Bob Veda	Irrigation	Abandoned 1950	367	282 - 297 346 - 360
739A	4S/14W-20J2	1968	L.A.C.F.C.D.	G.W. Observation	In Use	743	565 - 605
739B	4S/14W-20J3	1968	L.A.C.F.C.D.	G.W. Observation	In Use	743	300 - 460
739C	4S/14W-20J4	1968	L.A.C.F.C.D.	G.W. Observation	In Use	743	170 - 230
746	4S/14W-9Q1	1923	Midway Oil Co.	Industrial	Abandoned 1970	557	241 - 252 380 - 395

[1/] L.A.C.F.C.D. = Los Angeles County Flood Control District

[2/] GW = Groundwater

HARGIS & MONTGOMERY, INC.
TUCSON, ARIZONA

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
747	4S/14W-16L1	1912	City of Torrance	Domestic	Abandoned 1955	301	---
747A	4S/14W-16L3	---	City of Torrance	Domestic	Abandoned 1959	300	244 - 275
747B	4S/14W-16H1	---	L.M. Ellinewood	---	---	184	---
747C	4S/14W-16B1	---	Edison Company	---	---	270	---
747D	4S/14W-16L2	1936	City of Torrance	Domestic-30% Irrigation-70%	Abandoned 1971	492	195 - 380 450 - 474
747E	4S/14W-16P1	---	San Pedro Commercial Co.	---	Abandoned 1947	---	---
747F	4S/14W-16F1	1950	California Water Service Co.	Domestic	In use	510	204 - 504
747G	4S/14W-16L4	1952	City of Torrance	Domestic	In Use	654	257 - 329 448 - 545 593 - 655
747H	---	---	---	---	---	---	---
747J	4S/14W-16L5	1969	L.A.C.F.C.D.	G.W. Observation	In Use	673	410 - 540
747K	4S/14W-16L6	1969	L.A.C.F.C.D.	G.W. Observation	In Use	673	130 - 260

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
748	4/14-16Q2	1927	Priami Palos Verdes View Dairy	Irrigation & Domestic	In Use	350	245 - 266 300 - 308
748A	4S/14-16Q3	1895	A. Van Vliet	Livestock	Abandoned 1947	189	
748B	4S/14W-21D1	1936	Mr. Fred Kita	Irrigation	Capped 1960	592	464 - 480
748C	---	---	Joe Abegg	---	Unused since 1947	---	---
748D	4S/14W-21B1	1951	Ken Battram	Irrigation	Destroyed 1965	548	254 - 260 370 - 380 470 - 480 512 - 522
748E	---	---	L.A.C.F.C.D.	---	---	26	---
748F (see 748B)	---	---	---	---	---	---	---
748G	---	---	Revco Oil Co.	Oil Well	---	1,003	---
748H	4S/14W-21F1	1955	L.A.C.F.C.D.	Geol. Expl. & G.W. Observation	In Use	212	191 - 193
748J	4S/14W-21F2	1966	L.A.C.F.C.D.	G.W. Observation	In Use	409	368 - 389
749	4S/14W-21P1	1959	W. L. Rice	---	Buried	225	---

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
749A	4S/14W-21N1	1948	John R. Bauman	Farm	In Use	500	305 - 335
749B	4S/14W-21P2	1949	John Iwata	Irrigation	In Use	548	292 - 308 410 - 440 456 - 468
749C	4S/14W-21L1	1950	C. Ito	Irrigation	In Use	518	270 - 274 428 - 430 470 - 480
749D	4S/14W-21L2	1951	Don Wilson	Irrigation	Capped 1961	520	---
757	4S/14W-16G1	---	Del Amo Estate	---	Dry	90	---
757A	---	1901	H.J. McNally	Dom., Stock & Irrigation	Abandoned	265	---
758	4S/14W-21A8(?)	---	Standard Oil Co.	Domestic	In Use	111	---
758A	4S/14W-22D2	1923	Standard Oil Co.	Industrial	Capped 1963	390	212 - 244 340 - 352
758B	---	---	L.A.C.F.C.D.	---	---	26	---
758C	4S/14W-22E1	1954	Vickers, Inc.	Irrigation	Abandoned 1957	440	240 - 255 405 - 420

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
758D	4S/14W-21G1	1955	L.A.C.F.C.D.	Exploratory & G.W. Observation	In Use	239	186 - 189
758E	4S/14W-21H3	1955	L.A.C.F.C.D.	Exploratory & G.W. Observation	Capped 1972?	250	243 - 244
758F	4S/14W-15N1	1971	L.A.C.F.C.D.	G.W. Observation	In Use	420	360 - 370
759	4S/14W-27D1	1920	Weston Ranch	Irrigation	Concreted 1932	450	303 - 360?
759A	4S/14W-22M1	1919	Standard Oil Co.	Irrigation	Abandoned	500	247 - 257? 390 - 397? 420 - 440?
759B	4S/14W-21Q1	---	T. Yamaguchi Nursery	Irrigation	Destroyed 1958	500	---
759C	4S/14W-22N1	1950	A.J. Ashkar	Irrigation	In Use	464	360 - 380 442 - 448
759D*		1976	Hughes Aircraft Company	Industrial	In Use	520	300 - 500
766	4S/14W-10K1	1935	City of Torrance	Municipal Supply	Destroyed 1970	703	170 - 240 240 - 284 300 - 398 434 - 485 535 - 550

*Not recorded in L.A.C.F.C.D. files.
Incorrectly identified as well 769C in California Department of Water Resources, Watermaster Service in the West Coast Basin, Los Angeles County, 1982.

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
766A	4S/14W-10K2	1965	City of Torrance	Municipal Supply	In Use	812	180 - 812
766B	4S/14W-10K3	---	City of Torrance	Municipal Supply	In Use	816	210 - 786
767	4S/14W-15P1	---	R.A. Watt Construction Co.	---	Destroyed 1963	300	---
768	4S/14W-22D1	1923	Standard Oil Co.	Industrial & Dom.	Destroyed 1969	404	230 - 250 322 - 350
768A	4S/14W-22F1	---	A.J. & Daisy L. Early	---	---	---	---
768B	---	1925	John E. Marble	---	Unused since 1937	982	916 - 928 941 - 969
768C	4S/14W-22E1	1937	John E. Marble	Irrigation	Destroyed 1963	382	214 - 232 326 - 332
769	4S/14W-22Q1	1929	Union Oil Co. of California	Industrial	Capped 1962	660	---
769A	4S/14W-27B1	---	Doheny	Industrial & Irrigation	Abandoned	375	---
769B	4S/14W-22L1	1928	Nat'l Electric Product Corp.	---	Covered 1949	353	212 - 336

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
769C	4S/14W-22L2	1939?	Nat'l Electric Product Corp.	Industrial	Destroyed 1958?	501	214 - 222 244 - 248 274 - 284 294 - 298 346 - 360
769D	4S/14W-22P3	1936	H.J. Early	Irrigation	Abandoned 1965	500	---
776	4S/14W-10J1	1935	City Of Torrance	Municipal Supply	Abandoned 1948	623	170 - 240 240 - 320 360 - 520
778	4S/14W-14P1	1923	Pacific Western Oil Company	---	Dry - 1947	400	245 - 257? 556 - 580?
778B	4S/14W-14N1	---	Henry S. Woolner	Observation	Unused since 1947	---	---
778C	4S/14W-14N2	---	Mrs. Anna C. Whitney	---	Abandoned 1918	110	---
778D	4S/14W-23D1	1923	MacDonald & Burns	Observation	Unused since 1947	---	---

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
778E	4S/14W-23D2	---	Henry Wertalla	Observation	Unused since 1947	230	---
779	4S/14W-23N1	---	Narbonne Water Company No. 2	---	Abandoned 1933	683	575 - 620
779A	4S/14W-23N2	1933	L.A. County W.W.&[3/] Util. Div. District No. 13	Public Supply	Destroyed 1971	640	560 - 592 602 - 614
779B	4S/14w-22J1	---	Geo. A. Weymouth	---	Abandoned 1947	---	---
787	4S/14W-14L1	1923	Texas Company	---	---	648	556 - 580
787A	---	1923	No. American Oil Consolidated	---	---	309	220 - 240
788	4S/14W-23H1?	1925	Bob Veda	Irrigation	In Use	495	308 - 320 340 - 375 390 - 416 431 - 441 462 - 475
788A	4S/14W-23A1	1889	E. Kettler	---	---	78	---
788B	4S/14W-23A2	1930	Kettler Ranch	---	Destroyed	235	126 - 138

[3/] Los Angeles County Wastewater and Utilities Division

TABLE D-1 (continued)
SUMMARY OF REGIONAL WELL DATA

...WELL IDENTIFIER... COUNTY	STATE	DATE DRILLED	MOST RECENT OWNER	USE	REPORTED STATUS	TOTAL DEPTH (feet)	PERFORATED INTERVAL(S) (feet)
789	4S/14W-23J1	1932	Narbonne Ranch Water Co. No. 3	---	Unused since 1939	460	312 - 326 326 - 370 370 - 400 420 - 430
789A	4S/14W-23K1	1923	Narbonne Water Company No. 3	Municipal	Abandoned 1926	600	---
789B	4S/14W-23K2	1907	Narbonne Ranch Water Company	---	Abandoned 1932	665	---
789C	4S/14W-23J2	1938	Narbonne Water Company No. 3	Municipal	Destroyed 1962	464	312 - 445
789D	---	1925	Narbonne Ranch Water Company	---	Unused since 1925	665	---
789E	4S/14W-26A1	---	American Plant Growers	Irrigation & Dom.	Destroyed 1969	350	---
798A	4S/14W-13N1	1914	H.C. March	Irrigation	Unused since 1940	395	---
798B	4S/14W-23H2	1925	Bob Veda	Irrigation	---	446	275 - 280 303 - 328 342 - 360 365 - 382 393 - 433 436 - 446

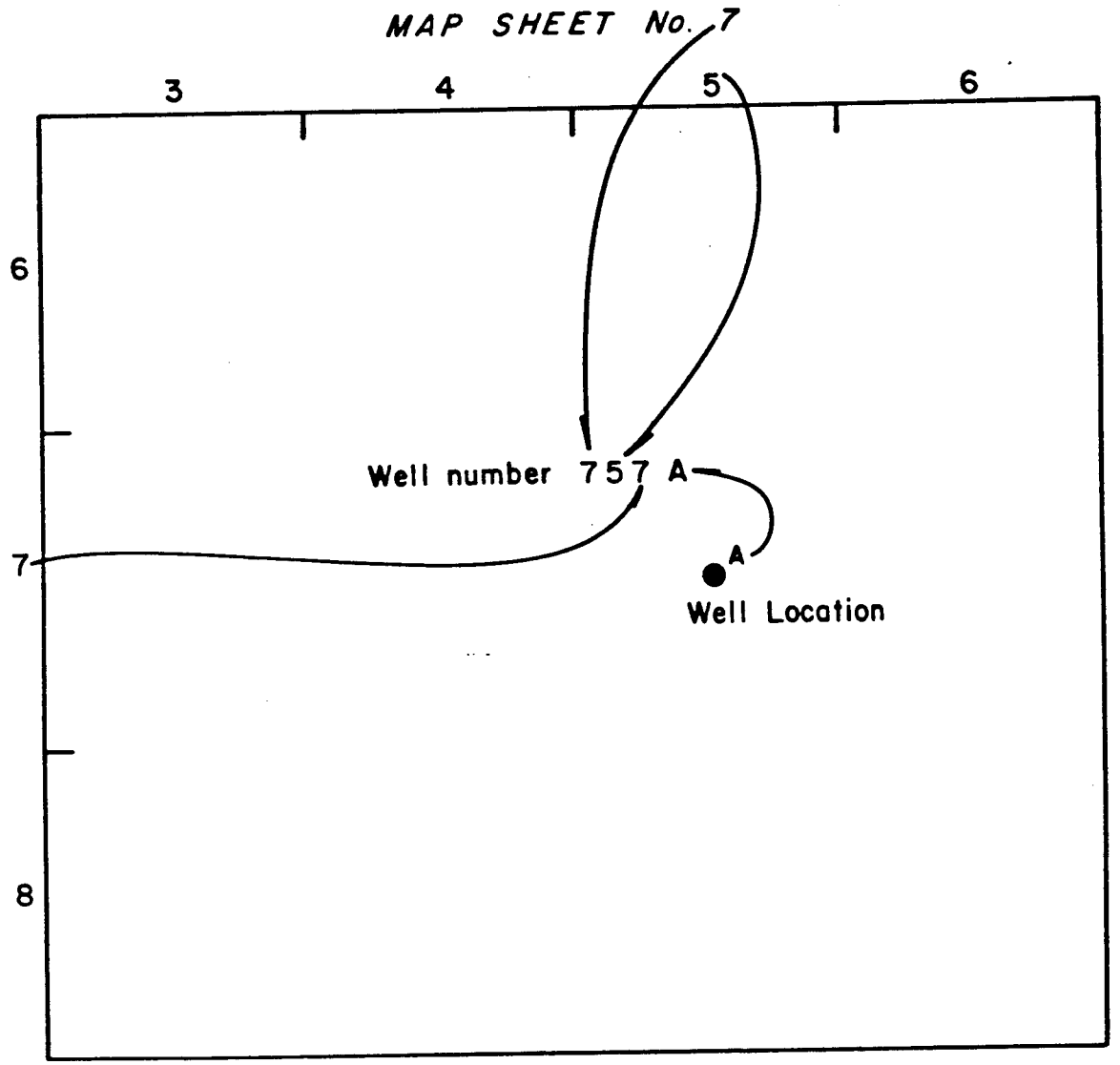

FIGURE D-1. LOS ANGELES COUNTY FLOOD CONTROL DISTRICT WELL NUMBERING SYSTEM

APPENDIX E

HARGIS & MONTGOMERY, INC.

APPENDIX E

LITHOLOGIC LOGS OF SELECTED REGIONAL WELLS

HARGIS & MONTGOMERY, INC.

APPENDIX E

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TABLE E-1

LITHOLOGIC LOG OF PLANT INDUSTRIAL SUPPLY WELL

(drilled by Beylik Drilling, Inc., 1976)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 50	Sand
50 - 70	Silt
70 - 130	Fine sand
130 - 140	Coarse sand
140 - 150	Sandy clay
150 - 160	Sand, gravel
160 - 200	Fine sand
200 - 240	Clay
240 - 520	Sand, gravel

TABLE E-2

LITHOLOGIC LOG OF WELL 748J

(drilled by United Geophysical Corp., 1966)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 10	Silty clay
10 - 15	Silty clay with sand and gravel
15 - 30	Sandy and silty clay
30 - 60	Clay
60 - 75	Sandy silty clay
75 - 90	Sandy clay
90 - 105	Coarse to fine silty sand
105 - 120	Coarse to medium silty sand
120 - 135	Coarse to fine silty sand
135 - 160	Coarse to fine very silty sand
160 - 167	Sandy clay
167 - 195	Coarse to fine sandy-clayey silt
195 - 210	Coarse to fine sandy silt
210 - 225	Medium to fine sandy-clayey silt
225 - 230	Coarse sand
230 - 233	Coarse to fine sandy-clayey silt
233 - 235	Clay
235 - 239	Coarse sandy silt
239 - 245	Coarse to fine sand and gravel
245 - 260	Coarse silty to very silty sand
260 - 270	Coarse sand
270 - 331	Coarse sand and gravel
331 - 405	Coarse sand and some gravel

TABLE E-3

LITHOLOGIC LOG OF WELL 758C

(drilled by M. R. Peck and Sons, 1954)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 6	Topsoil
6 - 20	Adobe and clay
20 - 38	Brown sand
38 - 44	Yellow clay
44 - 140	Yellow sand
140 - 141	Large blue gravel
141 - 208	Blue water sand
208 - 224	Blue sandy clay
224 - 232	Blue sand, pea gravel
232 - 235	Blue sand, scattered gravel
235 - 250	Coarse gravel, blue sand
250 - 256	Blue sand, scattered pea gravel
256 - 290	Blue sand, few scattered gravel
390 - 440	Medium to coarse sand, pea gravel

TABLE E-4

LITHOLOGIC LOG OF WELL 758E

(drilled by M. R. Peck and Sons, 1955)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 15.5	Silty clay
15.5 - 24	Very tine to fine sand
24 - 29.5	Fine sand (well sorted)
29.5 - 31.5	Medium to coarse sand
31.5 - 40.5	Very fine to fine sand
40.5 - 44.5	Fine to very coarse sand
44.5 - 57.5	Medium sand (well sorted)
57.5 - 62	Gravelly coarse sand
62 - 68.5	Silty, very fine sand
68.5 - 73	Fine to medium sand
70 - 113	Very fine and fine sand
113 - 146	Silty, very fine sand
146 - 175	Very fine to very coarse sand
175 - 181	Very fine to medium sand
181 - 185	Fine to coarse sand
185 - 196	Medium sand (well sorted)
196 - 208	Fine to medium sand (well sorted)
208 - 214	Fine sand (well sorted)
214 - 228	Clay
228 - 234	Coarse sand
234 - 237	Sandy clay
237 - 252	Very coarse, gravelly sand

TABLE E-5

LITHOLOGIC LOG OF WELL 758F

(drilled by L. A. County Flood Control District, 1971)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 24	Silty sand
24 - 45	Sandy clay
45 - 71	Clayey sand
71 - 81	Coarse sand
81 - 100	Clayey silty sand
100 - 131	Silty clay
131 - 141	Sandy clay
141 - 159	Clayey sand and coarse sand
159 - 191	Coarse uniform sand
197 - 230	Coarse sand
230 - 240	Coarse sand and gravel
240 - 247	Coarse sand
247 - 287	Coarse sand and sandy clay
287 - 294	Coarse sand, clay and sandy clay
294 - 300	Coarse sand and gravel
300 - 310	Sand and silty sandy clay
310 - 316	Sand and clay
312 - 321	Coarse sand and gravel
321 - 380	Coarse to very coarse sand
380 - 418	Coarse sandy silty clay
418 - 410	Very coarse sand and fine gravel

TABLE E-6

LITHOLOGIC LOG OF WELL 759

(drilled by E. B. Fish, 1920)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 14	Soil
14 - 90	Clay
90 - 98	Sandy sediment
98 - 110	Fine sand
110 - 153	Sediment blue clay
153 - 156	Gravel
156 - 166	Blue sediment
166 - 245	Fine sandy muck
245 - 280	Fine sand
280 - 303	Sediment clay
303 - 450	Sand, fine gravel

TABLE E-7

LITHOLOGIC LOG OF WELL 759C

(drilled by M. R. Peck and Sons, 1950)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 8	Adobe
8 - 18	Yellow clay
18 - 25	Yellow sand
25 - 50	Sandy clay
50 - 70	Sand and clay streaks
70 - 108	Fine yellow sand
108 - 150	Fine yellow water sand
150 - 214	Fine mucky sand
214 - 248	Soft blue clay
248 - 254	Sandy clay
254 - 270	Coarse sand and pea gravel
270 - 304	Coarse and fine sand
304 - 332	Coarse sand and pea gravel
332 - 353	Fine blue sand
353 - 384	Coarse sand and pea gravel
384 - 390	Fine sand and clay streaks
390 - 444	Fine and coarse sand
444 - 452	Fine and coarse sand with pea gravel
452 - 464	Fine sand and sandstone

TABLE E-8

LITHOLOGIC LOG OF WELL 768A

(drilled by J. H. Tomkins, 1923)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 25	Sand and soil
25 - 76	Clay and sand
76 - 88	Clay
88 - 140	Fine packed sand
140 - 198	Sand
198 - 212	Clay
212 - 230	Coarse sand
230 - 240	Good coarse sand
240 - 244	Fine gravel
244 - 280	Coarse sand
280 - 340	Sand
340 - 352	Coarse sand
352 - 390	Sand

TABLE E-9

LITHOLOGIC LOG OF WELL 769

(drilled by E. B. Fish, 1929)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 6	Soil
6 - 122	Sediment
122 - 190	Fine sand
190 - 196	Blue clay
196 - 218	Fine sand and pea gravel
218 - 230	Pea gravel
230 - 324	Fine sand
324 - 330	Coarse and small pea gravel
330 - 382	Fine sand

TABLE E-10

LITHOLOGIC LOG OF WELL 779A

(drilled by Roscoe Moss Co., 1933)

DEPTH INTERVAL (feet)	DESCRIPTION OF MATERIAL
0 - 80	Sandy clay
80 - 91	Sand
91 - 120	Sandy clay
120 - 130	Fine sand, some gravel
130 - 154	Sandy clay
154 - 160	Sand and gravel
160 - 180	Sandy clay
180 - 190	Coarse sand, gravel
190 - 218	Sand
218 - 248	Coarse sand
248 - 266	Sand
266 - 300	Fine sand
300 - 318	Muddy sand
318 - 330	Cement with streaks of sand
330 - 366	Coarse sand
366 - 420	Sand
420 - 450	Sandy clay
450 - 468	Clay
468 - 486	Sandy clay
486 - 498	Muddy sand
498 - 556	Sand
556 - 592	Sand with gravel
592 - 602	Sand
602 - 614	Sand and gravel
614 - 640	Sand

INDEX OF ATTACHMENTS

DOCUMENT IDENTIFICATION	TYPE OF DOCUMENT	DATE	TO	FROM	DESCRIPTION	NO. OF PAGES
					LEGEND: DHS - Cal. Dept. of Health Services HAC - Hughes Aircraft Company H&M - Hargis & Montgomery Inc. RWQCB - Cal. Regional Water Quality Control Board SCAQMD - South Coast Air Quality Management District	
Attachment A	Form	08/12/80	EPA	P. Mahlow Jr., HAC	EPA Form 8700-12, Notification of Hazardous Waste Activity and EPA acknowledgment	3
	Form	11/05/80	EPA	W. Christoffers, HAC	EPA Form 3510-1, General Information and map regarding facility	8
	Form	11/05/80	EPA	W. Christoffers, HAC	EPA Form 3510-3, General Information and map regarding facility	6
Attachment B	Map	04/24/91			Facility Map of Hughes Aircraft Company facility in Torrance , CA showing old and new hazardous waste tanks and storage yards.	1
Attachment C	Report	06/15/83	HAC	H&M	Report entitled "Investigation of Soil Conditions in the Vicinity of Buried Tanks - Hughes Aircraft Company, Electron Dynamics Division - Torrance, California"	25
Attachment D	Report	08/29/83	HAC	H&M	Report entitled "Investigation of Groundwater Quality and Regional Hydrogeologic Conditions - Hughes Aircraft Company, Electron Dynamics Division - Torrance, California	71
Attachment E	Letter	06/27/83	B. Danner, Latham & Watkins	C. Dickens, H&M	Inspection of the solvent tank removal and hydrostatic testing of 06/23 -24/83	2
Attachment F	Letter	08/24/83	B. Danner, Latham & Watkins	C. Dickens, H&M	Inspection of the removal and hydrostatic testing of solvent tank No. 2 on June 30 - July 1, 1983	2

DOCUMENT IDENTIFICATION	TYPE OF DOCUMENT	DATE	TO	FROM	DESCRIPTION	NO. OF PAGES
Attachment G	Work Plan	01/30/91	M. Yalch, HAC	M. Wiedlin, H&M	Soil and Groundwater Assessment Work Plan with transmittal letter	47
Attachment H	Memo	08/03/83	S. Chao, HAC	P. Mahlow, Jr., HAC	Analysis of Soil Samples, Results	4
Attachment I	Permit	01/30/90	HAC	Torrance Fire Dept.	Fire Department Final Permit to operate three underground storage tanks (2,000, 3,000 and 10,000 gallon capacity)	1
Attachment J	Permit	07/11/83	HAC	Torrance Bldg. Dept.	Building permit 11986B with field notes for concrete building, solvent tank vault and pads	2
Attachment K	Permit	06/23/83	HAC	SCAQMD	Permit to construct 2,000 gallon solvent waste storage tank (No. 110113)	1
	Permit	04/24/84	HAC	SCAQMD	Permit to operate 2,000 gallon solvent waste storage tank (No. 37536)	1
	Permit	10/24/84	HAC	SCAQMD	Annual validation of permit to operate (No. M37536)	1
	Invoice	11/19/90	HAC	SCAQMD	Invoice for 2,000 gallon solvent waste storage tank with handwritten note "Pd 11/7/90"	1
Attachment L	Form	02/20/91	DHS	HAC	EPA Form 8700-23, amended Hazardous Waste Permit Application Part A	9
Attachment M	Report	11/15/82	HAC	DHS	Interim status document for Hughes Aircraft authorizing continued operation of facility under interim status pending final review and decision on Issuance of Hazardous Waste Facility Permit (with cover letter to all facility operators)	32
Attachment N	Notes	10/25/82			Field notes taken by DHS inspector, D. Wong	1
Attachment O	Letter	12/02/82	P. Mahlow, Jr., HAC	J. Hinton, DHS	Interim staus inspection conducted 10/25/82 with corrective actions to be taken	2

DOCUMENT IDENTIFICATION	TYPE OF DOCUMENT	DATE	TO	FROM	DESCRIPTION	NO. OF PAGES
Attachment P	Letter	12/22/82	D. Wong, DHS	P. Mahlow, Jr., HAC	Plans to dispose of or store existing hazardous waste by 12/23/82, to relocate storage by 04/00/83, and provide to DHS plans for new hazardous waste storage area	1
Attachment Q	Closure Plan	00/00/81 or 82	DHS	HAC	Closure Plan	2
Attachment R	Closure Plan	00/00/82 or 83	DHS	HAC	Closure Plan and HAC explanatory notes dated May 1, 1991	2
Attachment S	Notes	00/00/00			Site file notes of unknown date and origin re: interim plan and tank removal/closure	2
Attachment T	Memo	07/05/83	File	D. Wong, DHS	Handwritten memo re: subsurface tank leakage report, phone conference and notification to RWQCB	1
Attachment U	Closure Plan	00/00/00			Current Closure Plan for Torrance Plant (1991)	4
Attachment V	Closure Plan	04/23/89	J. Hinton, DHS	P. O'Brien, HAC	Transmittal of Hazardous Waste Operation Plan for Hughes-Electron Dynamics Division, Torrance, CA and inappropriateness of categorical disclosure of plans under Public Records Act	2
Attachment W	Closure Plan	11/21/85	DHS	T. Barry, HAC	Transmittal of Hazardous Waste Operation Plan and selected pages including Closure Plan	3
Attachment X	Closure Plan	05/30/86	DHS	T. Barry, HAC	Transmittal of Revised Operation Plan	6
Attachment Y	Bond	09/30/82	HAC	Hartford Accident & Indemnity	Bond re: closure, memo re: description, certificates of insurance and three certificates of insurance	8
	Form	06/07/83	OSCO	HAC	Service Order to Oil Process Co. ("OSCO") for solvent "pump up" No. 24353	1
	Manifest	06/07/83	Landfill	R. Salampossy, HAC	Manifest No. 8278567 for flammable solvent	1

DOCUMENT IDENTIFICATION	TYPE OF DOCUMENT	DATE	TO	FROM	DESCRIPTION	NO. OF PAGES
	Manifest	07/01/83	BKK	P. Mahlow, Jr., HAC	Cal. Manifest No. 121659 water/solvent mixture	1
	Manifest	08/12/83	Kettleman Hills	P. Mahlow, Jr., HAC	Manifest No. 83081149 for empty solvent tank and work order 39755 from JC Incorporated	2
	Manifest	08/23/83	Landfill	P. Mahlow, Jr., HAC	Manifest No's. 83081150, 83081151 and 83081152 for hazardous waste (soil)	3
	Form	10/10/83	RWQCB	M. Kreismanis, HAC	Completed Ground Water Protection Program Underground Tank Investigation form	4
	Form	06/22/88			Underground Storage Tank Inventory	2
	Letter	02/14/86	DHS	T. Barry, HAC	Information on removal and replacement of solvent tank, and HAC explanatory notes dated May 1, 1991	2
	Memo	07/15/83	D. Wong, DHS	Nestor, DHS	Handwritten memo re: following up on tank leak	1
	Memo	07/15/83	J. Workman, RWQCB	A. Novak, RWQCB	Handwritten memo re: investigation of solvents	5
	Memo	08/15/83	P. Mahlow Jr. HAC	H. Klos, HAC	Soil samples of piles around former solvent tank	1
	Notes	06/17/83			Lab analysis of 3,000 gallon solvent tank residue prior to tank's removal	1
	Notes	00/00/83			Notes re: solvent tank contingency	1
	Notes	00/00/83		P. Mahlow Jr. HAC	Notes re: notice to state and narrative on tank removal	5
	Notice	05/09/86	P. O'Brien, HAC	J. Hinton, DHS	Letter and Notice of Deficiency re: operation plan	5

DOCUMENT IDENTIFICATION	TYPE OF DOCUMENT	DATE	TO	FROM	DESCRIPTION	NO. OF PAGES
	Photos	00/00/83			Photos re: solvent tank removal dated 6/27/83, 7/1/83 and 8/83	5
	Report	07/05/83		D. Wong, DHS	Waste solvent underground tank leak	1
	Notes	08/03/86		P. Mahlow Jr., HAC	Notes re: solvent tank photos and tank information	1
	Drawing	03/25/83		HAC	ACMA SHEET C-4, Demolition Plan, with stamped approval of Torrance Building Department	1
	Drawing	03/25/83		HAC	ACMA SHEET C-5, Service Yard Area - Plot Plan, with stamped approval of Torrance Fire Department and Torrance Department of Building & Safety	1
	Drawings	03/25/83		HAC	ACMA SHEET C-6, Patio Area - Plot Plan, showing solvent tank vault, and C-7, Deionized Water Tank Pad, Solvent Tank, Plans and Details, with stamped approval of Torrance Department of Building & Safety	2

E

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
1735 EAST FORT LOWELL ROAD SUITE 5
TUCSON, ARIZONA 85719 (602) 881-4912
TELEX: 165597 HAM TUCSON

ERROL L. MONTGOMERY, PG
DAVID R. HARGIS, PG
JOHN W. HARSHBARGER, PG., PE

June 27, 1983

Mr. Bryant Danner
LATHAM & WATKINS
555 South Flower Street
Los Angeles, California 90071

Regarding: INSPECTION OF SOLVENT TANK REMOVAL
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

Dear Mr. Danner:

Pursuant to your request, I inspected the removal and hydrostatic testing of the 500 gallon solvent disposal tank located at the Hughes Aircraft Company (the Plant) in Torrance, California. Removal and testing of the solvent tank were completed by the IT Corporation (Contractor), Wilmington, California, on June 24, 1983.

I arrived at the Plant at 0900 and proceded to the solvent tank site with Mr. Timothy J. Barry, Environmental Health and Safety Engineer, Hughes Aircraft Company. When I arrived at the tank site, the contractor had already excavated to the top of the tank, which was about five feet below land surface. The contractor proceeded to excavate soils until the top and the north and east sides of the tank were completely exposed.

At 1030, two Hughes employees cut two inlet lines feeding into the tank and the contractor then lifted the tank out using a chain attached to two hooks located on the top of the tank. The tank was placed up-right approximately 50 feet east of the excavation. The tank was not damaged during removal.

At 1100 hours, the contractor began filling the tank with water. By 1130 hours the tank and inlet pipes protruding above the tank were completely filled with water. At this time I informed the contractor to scrape the sides of the tank, after which I throughly inspected the tank and did not observe any leaks. The tank appeared to be in good condition. Mr. Barry took pictures of the tank from all sides once the tank was full of water.

At 1145 hours, the contractor proceeded to pump out the tank. Mr. Barry indicated that the tank would be temporarily stored in a

secured area at the Plant in case the California Department of Health Services requests to inspect the tank.

Once the tank was removed, I observed that the sandy fill soils beneath the tank were saturated. However, the fluid was determined to be water and not solvents leaking from the tank. In my opinion, the water observed in the tank excavation is probably a result of surface water which infiltrates above the tank and percolates downward until encountering the grey-black clay deposit which underlies the tank. The tank was originally placed in a pit excavated in the grey-black clay which extends to a depth of about 10 to 12 feet at the Plant. Once the tank was placed in the pit, the excavation was backfilled with sand. The clay would effectively impound any water percolating into the sand backfill.

If you have any questions or wish further discussion concerning the removal or hydrostatic testing of the tank, please contact me.

Very truly yours,

Chuck M. Dickens

Chuck M. Dickens
Senior Hydrogeologist

F

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
1735 EAST FORT LOWELL ROAD, SUITE 5
TUCSON, ARIZONA 85719 (602) 881-4912
TELEX: 165597 HAM TUCSON

ERROL L. MONTGOMERY, P.G.
DAVID R. HARGIS, P.G.
JOHN W. HARSHBARGER, P.G., P.E.

August 24, 1983

Mr. Bryant C. Danner
LATHAM & WATKINS
555 South Flower Street
Los Angeles, California 90071

REGARDING: INSPECTION OF THE REMOVAL OF SOLVENT TANK NO. 1, HUGHES AIRCRAFT COMPANY, TORRANCE, CALIFORNIA

Dear Mr. Danner:

Pursuant to your request, I inspected the excavation, removal, and hydrostatic testing of solvent disposal tank no. 1 located at the Hughes Aircraft Company (the Plant) in Torrance, California. Removal and testing of the solvent tank were completed by the IT Corporation (Contractor), Wilmington, California, on June 30 and July 1, 1983.

I arrived at the Plant at 0930 on June 30 and proceeded to the solvent tank site with Mr. Paul Mahlow, Head, Environmental Health and Safety, Hughes Aircraft Company (HAC). When I arrived at the tank site, the contractor had nearly excavated to the top of the tank which was about five feet below land surface.

At 1100, the contractor proceeded to drill three 14-feet deep auger holes along the north side of the tank. Twenty-foot long I-beams were lowered into the auger holes. One-inch thick steel plates were inserted between the I-beams in order to stabilize the north side of the tank excavation and prevent a large de-ionized water tank from sliding into the excavation.

I collected soil samples from the three auger holes and detected a very strong solvent odor below 12 feet in each hole.

Also at 1100, IT Corporation detected explosive gases still present inside the tank. HAC personnel assembled a vacuum system to ventilate the tank and the explosive gas concentration decreased to a safe level.

The contractor spent the remainder of the day installing the I-beams and steel plates. At 1530, the contractor shut-down for the day.

HARGIS & MONTGOMERY, INC.

I arrived at the Plant the following day, July 1, 1983, at 0800. The contractor had finished installing the I-beams and steel plate wall-support system and commenced to excavate the top and south sides of the tank.

By 0930, the south side of the tank was excavated to a depth of 9-1/2-feet. A chain hooked to the backhoe was attached to a flange at the top of the tank and the tank was lifted to land surface. The tank was then transported to an asphalt paved parking area about 800 feet southeast of the original tank site. Excavated soil was also hauled to this area for temporary storage.

Once the tank was removed from the excavation, I detected a strong solvent odor in the soils but no discoloration of the soils beneath the tank. I also noted that the plumbing going into the tank appeared to be in good condition.

The dimensions of the tank were measured to be 13.2 feet in length and 6.3 feet in diameter which indicates a volume of about 3,000 gallons. An orange colored staining was observed on the sides of the tank directly below the tank fill pipe. This suggests that some periodic spillage of solvents occurred from the fill pipe. Mr. Timothy Allers, Environmental Health and Safety Engineer, Hughes Aircraft Company, took several photos of the tank.

At 1030, the contractor commenced filling the tank with water from a nearby fire hydrant. I immediately noted several very small pin-hole leaks along one bottom edge of the tank. However, these holes appeared to have developed when the contractor accidently scraped the edge of the tank on the asphalt paving while transporting the tank. The contractor also accidently punctured this area of the tank with a shovel while trying to clear away some soil.

An additional leak was suspected somewhere along the bottom and near the center of the tank, as a small volume of water appeared to be accumulating beneath the tank. After the tank was pumped out, it was rolled over and the tank bottom exposed. A hole approximately 1/4-inch in diameter was found on the bottom of the tank. Orange staining of the tank walls around the hole indicates that solvents probably leaked from the hole. The black coating around the tank was also cracked and decayed in the vicinity of the hole.

If you have any questions or wish further discussion concerning the removal or hydrostatic testing of the tank, please contact me.

Very truly yours,

HARGIS & MONTGOMERY, INC.

Chuck M. Dickens

Chuck M. Dickens,
Hydrogeologist

G

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Lanae J. Raymond
Peter T. Quinlan
J.D. Mohrbacher, P.E.

January 30, 1991

VIA FEDERAL EXPRESS

Michael Yalch, Ph.D.
HUGHES AIRCRAFT COMPANY
Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, CA 90509

Re: Transmittal of Final Soil and Groundwater Assessment Work Plan

Dear Dr. Yalch:

Enclosed are three copies of the final report entitled:

Soil and Groundwater Assessment Work Plan
Hughes Aircraft Company
Torrance, California

As discussed in our telephone conversation on January 29, 1991, Hughes Aircraft Company is responsible for submitting this report to the California Regional Water Quality Control Board by January 31, 1991.

Please return all previous draft copies of this report dated January 24, 1991, to our office. If you have any questions or require further discussion, please contact me.

Sincerely,

HARGIS + ASSOCIATES, INC.

Melissa Huff for:

Matthew P. Wiedlin
Project Hydrogeologist

MPW:mdu

Enclosures

cc: Gary L. Rafferty, Esq.

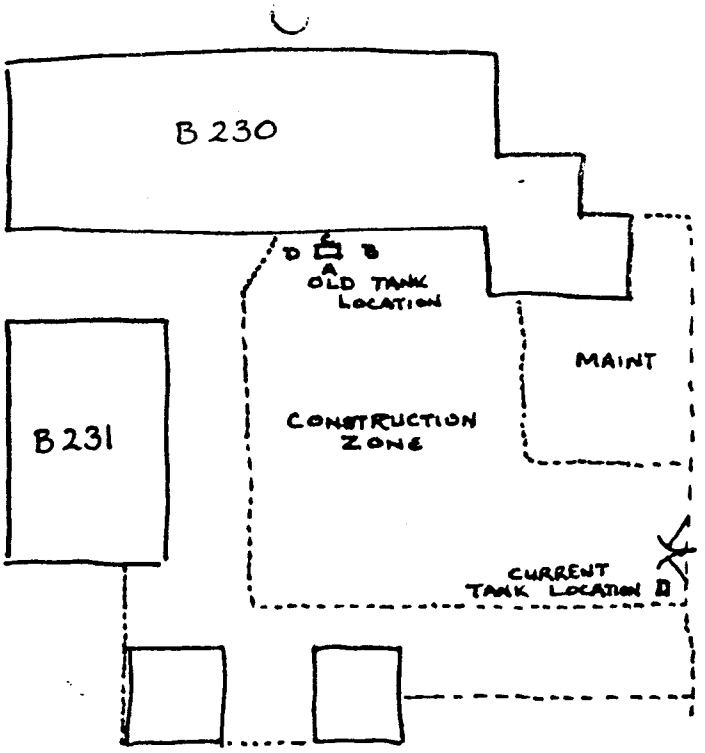
yalch03.850

Other Offices:
Tucson, AZ
Mesa, AZ
Manhattan Beach, CA
Burbank, CA

January 30, 1991

SOIL AND GROUNDWATER ASSESSMENT WORK PLAN
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

HARGIS+ASSOCIATES, INC.



8-3-85

PHOTOS REFERENCING PERSPECTIVE OF SOLVENT TANK.

- THE FRONT REFERENCED IN PHOTOS IS LOOKING AT SIDE "A" IN SKETCH ABOVE.
- THE PIPE EXTENSION USED FOR MANUAL ADDITIONS AND VACCUUM EMPTYING OF TANK IS END NEAR "B" IN SKETCH ABOVE.
- BACK SIDE IN PHOTOS WAS SIDE "C" IN SKETCH.
- THE SOLVENT DRAIN SYSTEM WAS PLUMBED TO THIS END OF THE TANK IDENTIFIED AS "D" IN SKETCH.

OLD TANK LOCATION WAS BELOW GROUND APPROXIMATELY 10' DEEP AT BASE 3'-4' BELOW SURFACE.

CURRENT LOCATION IS ABOVE GROUND, AWAITING DISPOSAL

HARGIS + ASSOCIATES, INC.
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January 30, 1991

VIA FEDERAL EXPRESS

Michael Yalch, Ph.D.
HUGHES AIRCRAFT COMPANY
Electron Dynamics Division
3100 West Lomita Boulevard
Torrance, CA 90509

Re: Transmittal of Final Soil and Groundwater Assessment Work Plan

Dear Dr. Yalch:

Enclosed are three copies of the final report entitled:

Soil and Groundwater Assessment Work Plan
Hughes Aircraft Company
Torrance, California

As discussed in our telephone conversation on January 29, 1991, Hughes Aircraft Company is responsible for submitting this report to the California Regional Water Quality Control Board by January 31, 1991.

Please return all previous draft copies of this report dated January 24, 1991, to our office. If you have any questions or require further discussion, please contact me.

Sincerely,

HARGIS + ASSOCIATES, INC.

for:

Matthew P. Wiedlin
Project Hydrogeologist

MPW:mdu

Enclosures

cc: Gary L. Rafferty, Esq.

yalch03.850

Other Offices:
Tucson, AZ
Mesa, AZ
Manhattan Beach, CA
Burbank, CA

HARGIS + ASSOCIATES, INC.

SOIL AND GROUNDWATER ASSESSMENT WORK PLAN
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

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2 PROPOSED MONITOR WELLS AND SOIL BORINGS

3 PROPOSED MONITOR WELL CONSTRUCTION DIAGRAM

4 ESTIMATED PROJECT SCHEDULE

APPENDICES

Appendix

A DATA FROM 1983 SOLVENT TANK INVESTIGATION

B CHAIN-OF-CUSTODY PROCEDURES

SOIL AND GROUNDWATER ASSESSMENT WORK PLAN
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

1.0 INTRODUCTION

This work plan has been prepared at the request of the Hughes Aircraft Company, Electron Dynamics Division (HAC) to evaluate soil and groundwater quality at the Electron Dynamics Division site located at 3100 W. Lomita Boulevard, Torrance, California (the site) (Figure 1). HAC requested that Hargis + Associates, Inc. (H+A) prepare this work plan to address groundwater quality issues referred to in a California Regional Water Quality Control Board (CRWQCB) letter pertaining to a former diesel fuel underground storage tank previously located at the site (CRWQCB, 1990). HAC also requested that the work plan to address groundwater and soil quality issues pertaining to two former underground solvent storage tanks previously located on the site. HAC requested this additional soil and groundwater work to confirm soil and groundwater quality in the vicinity of the former solvent tanks and to integrate the solvent tank assessment with the diesel fuel tank assessment required by the CRWQCB.

This work plan has been prepared to outline procedures for obtaining soil and groundwater data. These data will be used to evaluate the hydrogeologic conditions at the site and to evaluate the potential for groundwater contamination and provide information regarding potential on- and off-site sources.

1.1 BACKGROUND

HAC originally began operations at the site in 1966. Prior to that time, the site had been used as farm land. Historically, two buried steel tanks were used to store used industrial solvents at the site. Waste solvents were

periodically pumped out of the tanks and then disposed of at a licensed landfill. Tank no. 1 was located immediately south of Building no. 230 and was reported to have a capacity of approximately 3,000 gallons (Figure 2). This tank was reportedly installed in 1967. Tank no. 2 was located east of Building No. 231 and was reported to have a capacity of slightly more than 500 gallons (Figure 2). HAC personnel have indicated that tank no. 2 was installed in about 1974 (Hargis & Montgomery [H&M], 1983a). In 1983, tanks no. 1 and no. 2 were removed by IT Corporation and inspected by David Bacharowski and Al Novak of the CRWQCB (Yalch, 1991). Subsequently, Building No. 232 was constructed over the former tank no. 1 location.

Diesel fuel for an emergency electrical generator was stored in a third tank, designated in this report as tank no. 3, located adjacent to Building No. 230 (Figure 2). In 1985, tank no. 3 was removed by IT Corporation. An electrical substation was constructed over the former tank location.

1.2 PREVIOUS INVESTIGATIONS

In 1983, soil and groundwater conditions in the vicinity of tanks no. 1 and 2 were investigated by Hargis + Montgomery, Inc., (H&M). In 1985, soil conditions in the vicinity of tank no. 3 were investigated by IT Corporation. In 1988, the CRWQCB requested that additional soil sampling be performed at tank no. 3. Additional soil data were obtained and evaluated by H+A in 1989 (H+A, 1989).

1.2.1 Tanks No. 1 and No. 2

In 1983, a soil investigation was conducted at tanks no. 1 and no. 2 (H&M, 1983a and b). Four soil borings were drilled near tank no. 1 (Appendix A). Total depths for three of these borings ranged between approximately 30 and 49 feet below land surface (bls) (H&M, 1983b). The fourth soil boring was drilled

to a depth of approximately 110 feet. Seventeen soil samples were collected from the four soil borings near tank no. 1 and were analyzed for volatile organic compounds (VOCs). Tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,1,1-trichloroethane (TCA) were the most frequently detected VOCs in soil samples collected near tank no. 1 (H&M, 1983b). The highest concentration of VOCs detected was 440,000 milligrams per kilogram (mg/kg) of PCE in a soil sample collected at 31 feet bls in soil boring T-1 (Appendix A).

One soil boring was drilled near tank no. 2 to a depth of 30 feet bls. Three soil samples were collected from the soil boring near tank no. 2 and were analyzed for VOCs. VOCs were detected in only one of the three soil samples collected. PCE and methylene chloride were detected at concentrations of 270 mg/kg and 28 mg/kg, respectively, in the soil sample collected at 30 feet bls (Appendix A).

Groundwater samples were collected from the 110-foot soil boring drilled near tank no. 1 and from the industrial water supply well located on the site (Appendix A). Groundwater samples were analyzed for VOCs, trace metals, and common ions. The water from the industrial water supply well was reportedly used to operate a heat exchanger for industrial cooling and was returned to the groundwater system using two injection wells (H&M, 1983b). All three wells were subsequently deactivated in 1985. The groundwater sample collected from the soil boring was collected from just below the water table. The groundwater sample collected from the industrial water supply well was representative of deeper groundwater because the well is perforated between 300 and 500 feet bls.

The industrial water supply well was resampled by the Los Angeles County Sanitation District (LACSD) in 1986. The LACSD apparently sampled the well as part of a regional groundwater quality investigation. VOCs were not detected in the groundwater sample collected by the LACSD (McTaggart, 1990).

The VOCs TCE, trichlorofluoroethane, PCE, and TCA were detected in the groundwater sample collected from the soil boring near tank no. 1. TCE,

trichlorofluoromethane, PCE, and TCA were detected at concentrations of 65 micrograms per liter (ug/l), 12 ug/l, 11 ug/l, and 5 ug/l, respectively (H&M, 1983b) (Appendix A). In addition, nitrate as NO_3 was detected at a concentration of 177 milligrams per liter (mg/l) (H&M, 1983b) (Appendix A).

The VOCs chloroform and trichlorofluoromethane were detected in the water sample collected from the industrial water supply well. Chloroform and trichlorofluoromethane were detected at concentrations of 12 ug/l and 9 ug/l, respectively (Appendix A).

1.2.2 Tank No. 3

In 1985, series of soil investigations were conducted at tank no. 3 by IT Corporation and in 1989 by H+A (Collins, 1985; H+A, 1989). In September 1985, tank no. 3 was removed and soil containing diesel fuel was excavated. Subsequently an electrical substation was constructed at the former tank location. After the tank removal, IT Corporation drilled one angle and six vertical soil borings to a maximum depth of 90.5 feet bls to define the extent of diesel fuel in soil in the vicinity of the former tank location. H+A drilled three angle soil borings to collect soil samples from beneath the former tank location at depths between 44 feet to 85 feet bls.

Fuel hydrocarbons were detected in soil samples collected between land surface and a depth of approximately 25 feet bls. The greatest concentration of fuel hydrocarbons detected in unexcavated soil samples collected below the depth of excavation by IT Corporation was 2,400 mg/kg in a soil sample collected 21 feet bls (Crone and Collins, 1986). Fuel hydrocarbons were not detected in soil samples collected beneath tank no. 3 from approximately 45 feet bls to 85 feet bls. Toluene was detected in two soil samples collected beneath tank no. 3 at concentrations of 0.010 mg/kg and 0.0063 mg/kg at approximately 83 feet bls respectively.

In 1985, groundwater was reportedly encountered in an IT Corporation soil boring at a depth of approximately 90 feet bls. No groundwater samples were collected in conjunction with the investigation at tank no. 3. The CRWQCB has required HAC to evaluate groundwater quality near the former location of tank no. 3 because of concern regarding 1) the concentrations of toluene detected in soil samples collected near the water table; and 2) the possibility of diesel fuel migration to the water table from unremediated soil beneath the electrical substation (Wiedlin, 1990).

2.0 REGIONAL HYDROGEOLOGIC CONDITIONS

The site is located in the city of Torrance, California, and lies within the West Coast Basin, a sub-unit of the groundwater basin which underlies the Coastal Plain of Los Angeles County. The Coastal Plain is underlain by a thick sequence of Quaternary and Tertiary age sediments which overlie a basement complex comprised of metamorphic and igneous rocks.

The West Coast Basin extends from Long Beach to Santa Monica and is bounded by the Pacific Ocean on the west and the Newport-Inglewood uplift on the east. Groundwater in the West Coast Basin is produced primarily from a series of deep alluvial aquifers occurring within the Lakewood and San Pedro Formations (H&M, 1983b).

2.1 HYDROGEOLOGIC UNITS

The Gage aquifer and the Silverado aquifer underlie the site. Both the Gage and Silverado aquifers are areally extensive. The Silverado aquifer is the source of most groundwater pumped in the West Coast Basin.

Near the site, the Gage aquifer occurs from the water table to a depth of about 200 feet bls (H&M, 1983b). The Gage aquifer is about 100 feet thick and is comprised mostly of sand. This stratigraphic interval is also equivalent to the Gardena aquifer. The Gage aquifer designation has been applied here based on site-specific lithologic descriptions and the geographic location of the site relative to the published distribution of the Gage and Gardena aquifers (California Department of Water Resources [CDWR], 1961). The Gage aquifer is not utilized as a producing aquifer in the Torrance area.

Near the site, the Silverado aquifer underlies the Gage aquifer and is encountered at a depth of about 250 feet bls. Beneath the site, the two aquifers are separated by about 40 feet of clay (H&M, 1983b). This clay unit appears to

be present north, south, and west of the site and pinches out to the east (H&M, 1983b) (Appendix A). The Gage and Silverado aquifers appear to merge east of the site.

The Silverado aquifer is the most heavily pumped aquifer in the West Coast Basin. In 1945, approximately 90 percent of the total groundwater pumped in the Torrance-Inglewood area was derived from the Silverado aquifer (Poland, et al, 1959). Historically, nearly all industrial and municipal pumpage was from the Silverado aquifer (Poland, et al, 1959). Wells currently pumping in the site vicinity withdraw groundwater from the Silverado aquifer (CDWR, 1989).

2.2 MOVEMENT AND OCCURRENCE OF GROUNDWATER

Extensive pumping of groundwater in the early 1900's lowered water levels in the West Coast Basin to below sea level, which induced groundwater in the coastal area to flow toward the east. This allowed sea water to begin migrating eastward which degraded the fresh water aquifers of the basin. In the 1960's, a fresh water injection barrier was constructed along the coastline about 1.5 miles northwest of the site to prevent the landward migration of salt water. The operation of the barrier in conjunction with controlling groundwater extractions appears to have stabilized salt water intrusion and has maintained an eastward groundwater flow direction from the barrier toward the pumping centers east of the site.

Regional water level contour maps of the Silverado aquifer indicate that the direction of groundwater flow in the vicinity of the site has varied between northeast and southeast.

Groundwater was encountered at the site in 1983 and 1985 in two soil borings. The depth to groundwater in the soil borings was approximately 90 feet bls to 100 feet bls (H&M, 1983b; Collins, 1986). The current depth to groundwater at the site is not known because water level measurements from soil

borings are approximate and groundwater levels may change over time. Based on the change in water levels measured in West Coast Basin Water Master observation wells, water levels may have risen on the order of 5 feet since 1985 (Bookman-Edmonston Engineering, Inc., 1989).

3.0 PROPOSED SOIL AND GROUNDWATER ASSESSMENT

A soil and groundwater assessment is proposed to evaluate the soil and groundwater quality beneath the site and to provide data on the hydrogeologic units, the depth to groundwater, and the direction of groundwater flow at the site. The proposed work consists of drilling and sampling three soil borings and installing and sampling four to six groundwater monitor wells to be completed at the water table (Figure 2).

3.1 SOIL ASSESSMENT

Additional soil assessment work is proposed at the former locations of tanks no. 1 and no. 2 to evaluate the potential occurrence of VOCs in the soil beneath former tank no. 1. Three soil borings will be drilled and sampled near tanks no. 1 and no. 2. Because the location of former tank no. 1 is now inside Building No. 232, a low clearance auger drill rig is proposed to complete soil borings S-1 and S-2. The low clearance auger drill rig has a depth capability of approximately 40 feet bls and a height clearance requirement of approximately 10.5 feet.

The objective of tank no. 1 soil borings S-1 and S-2 is to collect soil samples below the depth at which the greatest VOC concentration was detected in soil samples collected in 1983. Soil samples will be collected at 5-foot depth intervals from approximately land surface to the depth capacity of the drill rig. Soil samples will be analyzed for VOCs using EPA Method 8240 (Table 1). Soil samples will be held in cold storage pending the results of the groundwater chemical analyses (Table 1). Additional analysis may be performed based on the results of the groundwater chemical analysis. The soil sampling work is proposed based on the assumption that the inside of Building No. 232 has adequate clearance for the auger drill rig.

Soil samples will also be collected adjacent to the location of former tank no. 2 to evaluate the potential occurrence of VOCs in soil beneath the former tank (Figure 3). The samples will be collected from the pilot borehole of monitor well MW-1 which will also be designated as soil boring S-3. Soil samples will be collected at 5-foot intervals from approximately land surface to the water table.

Soil samples will be collected for chemical analyses using California modified split spoon drive samplers with three 6-inch inner brass sleeves. The 6-inch brass sleeves are 2 inches in diameter. Teflon sheets will be promptly placed over the end of the brass tube which contains the soil sample to be submitted to the laboratory for chemical analysis. The teflon sheets will be held in place with plastic end caps which will be secured with tape. The completed self-adhesive sample label will be secured using clear tape. The soil samples will be placed in a zip-lock bag and stored on ice.

Soil borings S-1 and S-2 will be abandoned with a sand-cement grout. The grout will be poured into the open hole from land surface.

Soil sampling equipment will be decontaminated between sampling points using a nonphosphate soap wash, thorough rinsing with tap water, and a final distilled water rinse.

Black vinyl tape will be attached to the sample caps to prevent possible contamination or accidental opening of the samples during transfer. Lithologic logs will be prepared based on drive samples collected from soil borings and continuous core samples collected from monitor wells. These lithologic logs will include description of color, grain size, plasticity, and degree of induration of materials encountered. Records of penetration rates, casing schedules, and other pertinent observations will be recorded. All drilling and logging will be supervised by an experienced geologist.

3.2 GROUNDWATER ASSESSMENT

Additional groundwater assessment work is proposed to evaluate groundwater quality up and down gradient of the three former underground storage tank locations. Three to six groundwater monitor wells will be completed to approximately 15 feet below the regional water table. Four monitor wells are proposed at this time (Figure 2). The monitor well locations were selected to provide adequate separation and geometry to permit reliable evaluation of the direction of groundwater flow. Monitor wells MW-1 through MW-3 will be installed, surveyed, and water levels measured to determine direction of groundwater flow. Based on the direction of groundwater flow at the site, monitor well MW-4 will be constructed at the upgradient end of the site. Up to two additional monitor wells may be installed to ensure that representative groundwater quality data are obtained down gradient from the three former tank locations. Any additional monitor wells, will be installed immediately after the direction of groundwater flow is determined.

3.2.1 Monitor Well Design and Construction

Proposed monitor well construction materials, drilling techniques, well development, pump selection, and pump installation are described.

The depth to first groundwater at the site is expected to be about 90 to 100 feet bls. The monitor well screen intervals will be 20 feet in length with approximately 2 to 5 feet of screen above the water table.

Nominal 4-inch diameter factory-slotted polyvinyl chloride (PVC) screen with 0.030-inch slots will be installed in each well. Factory cleaned PVC well screen and casing will be shipped in sealed plastic wrap. Nominal 4-inch, flush-threaded schedule 40 PVC blank casing will be installed above the screen to land surface (Figure 3). A filter pack of Monterey No. 3 sand or its equivalent will be installed to approximately 2 feet above the screen. A fine-

grained sand will be placed over the filter pack to prevent the migration of the overlying grout into the screened interval. A sand-cement grout will be placed in the well annulus from the fine-grained sand to land surface. Utility vaults with vandal-resistant aluminum or steel lids will be installed at the surface over each well. Vaults will be set approximately 1 inch above grade to minimize entry of surface water.

A hollow stem auger drill rig will be used to construct the shallow monitor wells. Pilot boreholes will be drilled with a 6-inch outside diameter (OD) hollow stem auger with continuous core capability. Boreholes will be lithologically logged by inspecting auger cuttings and soil samples obtained from drive samples and/or core barrels (Section 3.1). Monitor well MW-1 will be logged using drive samplers rather than continuous core because the pilot borehole will also serve as soil boring S-3. Approximately 3 feet out of every 5 feet of soil drilled at soil boring S-3 will be sampled for lithologic logging purposes using a drive sampler. After the pilot borehole has been constructed, the hollow stem auger string will be removed and a larger diameter hole will be reamed using a 10-inch OD hollow stem auger. The large diameter hollow stem auger will be equipped with a wooden plug to prevent flowing sand from entering the inside of the hollow stem auger. Downhole drilling equipment will be steam cleaned before use in each monitor well.

Filter pack, fine-grained sand and the sand-cement grout will be placed by gravity feed directly into the annulus between the well casing and the hollow stem auger. To prevent sand locking inside the hollow stem, the auger will be slowly lifted from the hole as the filter pack is emplaced.

The hollow stem auger drilling method can be a rapid and effective means of collecting soil samples and installing shallow monitor wells under certain conditions. However, one of several limitations includes difficulties caused by flowing sand. In some cases, the potential for flowing sand conditions can be minimized if the hydraulic head difference between the inside of the auger and the groundwater in the formation can be reduced or reversed. The hydraulic head

difference can be minimized by limiting the depth penetrated below the water table. The hydraulic head difference can also be minimized by adding fresh water inside the hollow stem auger to overcome the hydrostatic pressure outside the auger.

The length of well screen set below the water table may be less than presently proposed if sands below the water table are unstable. To reduce the tendency for sand to flow, it may be necessary to add fresh tap water to the augers. This will maintain a water level inside the auger which is higher than the water table outside the auger. The amount of fresh tap water introduced will be kept to a minimum. After well completion, a volume of water greater than the volume of water added during the completion will be removed from the well.

Following completion, each shallow zone monitor well will be swabbed and bailed until the production of fine-grained sediments is minimal. If the well capacity is sufficient, final well development will be achieved by installing a temporary submersible pump and pumping until the discharge clears. Discharge rates will be estimated volumetrically. Water level recovery will be measured and recorded after development.

3.2.2 Groundwater Sampling

Groundwater samples will be collected from each monitor well. Proposed analytical methods, sampling procedures, quality assurance sampling, documentation, and sampling frequency are presented.

3.2.2.1 Analytical Methods

Groundwater samples will be analyzed for VOCs, total petroleum hydrocarbons (TPH), base metals/acid organics (BNAs), cyanide, trace metals, and nitrate (Table 1). VOCs and TPH have been selected for groundwater chemical analyses

because these compounds were reportedly stored in the former tanks located at the site. BNAs, cyanide, and trace metals will be analyzed to verify the concentrations of these compounds detected in the groundwater sample bailed from the soil boring near tank no. 1 in 1983 (H&M, 1983b). Nitrate will be analyzed because it was detected above the Federal Maximum Contaminant Level in the groundwater sample bailed from the soil boring in 1983 (H&M, 1983b).

3.2.2.2 Groundwater Sampling Procedures

Groundwater samples will be collected with dedicated electric submersible pumps. The pumps will have a nominal flow rate of 5 gallons per minute (gpm) which should be sufficient to purge the wells within approximately 10 minutes.

The wells will be pumped until at least three casing volumes of fluid are removed from the wells or until the parameters of electrical conductance (EC), pH, and temperature have stabilized. EC, pH, and temperature of well discharge will be frequently measured to verify that these parameters have stabilized prior to collection of samples.

The following will be performed during each sampling round:

1. Measure the water level with an electric sounder to the nearest 0.01 foot.

2. Pump the well until at least three casing volumes have been removed or EC, pH, and temperature have stabilized prior to collecting samples.

3. Collect groundwater samples from the discharge in appropriate sample containers (Table 2). Rinse nonpreserved sample containers with the well discharge prior to sample collection and label properly in the field. Preserved sample containers will not be pre-rinsed.

4. Record all pertinent data in field notebook during each sampling round. Pertinent data include:

   .. depth to static water level
   .. time that pumping begins
   .. time of sample collection
   .. the pump discharge rate
   .. the field parameters EC, pH, and temperature
   .. time that pumping stopped

Field measurements obtained during the sampling activities will include water levels, discharge rates, EC, temperature, and pH. A pH meter, conductivity meter and field thermometer will be used when purging monitor wells to assist in collection of representative groundwater samples. To ensure accuracy, the instruments will be calibrated periodically. Probes will be thoroughly rinsed with distilled water before each measurement. All field measurements will be recorded in the field notebook.

One field duplicate sample and one field blank will be submitted for each sampling round and analyzed for VOCs, TPH, BNAs, cyanide, trace metals, and nitrate. One trip blank will be submitted for each sampling round and analyzed for VOCs only.

An initial water sample will be collected from each monitor well after installation of the pumps. A second water sample will be collected approximately two weeks after the initial sampling. These data will be used to assess groundwater quality.

Documentation of chain-of-custody is required from the time of collection to the reporting of analytical results to ensure integrity of the samples (Appendix B).

4.0 HEALTH AND SAFETY/WASTE MANAGEMENT

A health and safety plan will be prepared to ensure safe working conditions during implementation of the proposed assessment field program.

Drill cuttings and purge water will be stored in Department of Transportation approved containers until the appropriate disposal procedures have been identified.

5.0 ESTIMATED PROJECT SCHEDULE

A project schedule has been prepared to identify the necessary steps and the estimated time required to fulfill the CRWQCB requirement (CRWQCB, 1990) (Figure 4). The actual time required to complete the assessment as defined in this work plan is subject to subcontractor availability, drilling conditions, client approval, and agency responsiveness.

Subject to HAC authorization, H+A will be prepared to start the field investigation on March 18, 1991, provided that CRWQCB approves the work plan within 30 days of submittal. If CRWQCB approval or HAC authorization is delayed beyond March 6, 1991, H+A will prepare to start the field investigation within 4 weeks of HAC authorization.

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Tables

TABLE 1

SUMMARY OF ANALYTICAL PROCEDURES

ANALYTES	ANALYTICAL METHOD NUMBER
Soil	
Volatile organic compounds	EPA Method 8240
Total petroleum hydrocarbons(a)	Modified EPA Method 8015
Base neutrals and acid organics(a)	EPA Method 8270
Trace metals(a)	Priority Metals Suite
Cyanide(a)	EPA Method 9010
Groundwater	
Volatile organic compounds	EPA Method 8240
Total petroleum hydrocarbons	Modified EPA Method 8015
Base neutrals and acid organics	EPA Method 8270
Trace metals	Priority Metals Suite
Nitrate	EPA Method 353.2
Cyanide	EPA Method 9010

(a) Optional analyses that may be performed pending the groundwater analytical results

EPA = U.S. Environmental Protection Agency

TABLE 2

SAMPLE HANDLING PROCEDURES

TYPE OF ANALYSIS (Analytical Method)	SAMPLE CONTAINER	SAMPLE VOLUME	PRESERVATION METHOD	MAXIMUM HOLDING TIME
Soil				
Volatile organic compounds (EPA Method 624/8240)	Brass tube	2-inch x 6-inch no head space	Cool to 4° C	14 Days
Groundwater				
Volatile organic compounds (EPA Method 624/8240)	Two 40-ml glass vials, teflon-lined septum	Vials filled completely, no head space	Cool to 4° C HCL to pH less than 2	14 days
Base/Neutral and acid organics (EPA Method 625/8270)	Two 1-liter amber glass bottles with teflon-lined caps	Bottle filled to neck	Cool, 4° C	7 days until extraction
Trace metals (Priority Metals)	One 500-ml polyethylene	Bottle filled to neck	Cool to 4° C HNO_3 to pH less than 2	6 months
Nitrate (EPA Method 353.2)	One 4-oz polyethylene bottle	Bottle filled to neck	Cool to 4° C	28 days

EPA = U.S. Environmental Protection Agency
HCL = Hydrochloric acid
HNO_3 = Nitric acid
H_2SO_4 = Sulfuric acid
ml = milliliter
oz = Ounce
NaOH = Sodium hydroxide
°C = Degrees Celsius

TABLE 2
SAMPLE HANDLING PROCEDURES
Page 2

TYPE OF ANALYSIS (Analytical Method)	SAMPLE CONTAINER	SAMPLE VOLUME	PRESERVATION METHOD	MAXIMUM HOLDING TIME
Groundwater				
Cyanide (EPA Method 9010)	One 4-oz polyethylene bottle	Bottle filled to neck	Cool to 4° C NaOH to pH greater than 12	14 days

EPA = U.S. Environmental Protection Agency
HCL = Hydrochloric acid
HNO_3 = Nitric acid
H_2SO_4 = Sulfuric acid
ml = milliliter
oz = Ounce
NaOH = Sodium hydroxide
°C = Degrees Celsius

Illustrations

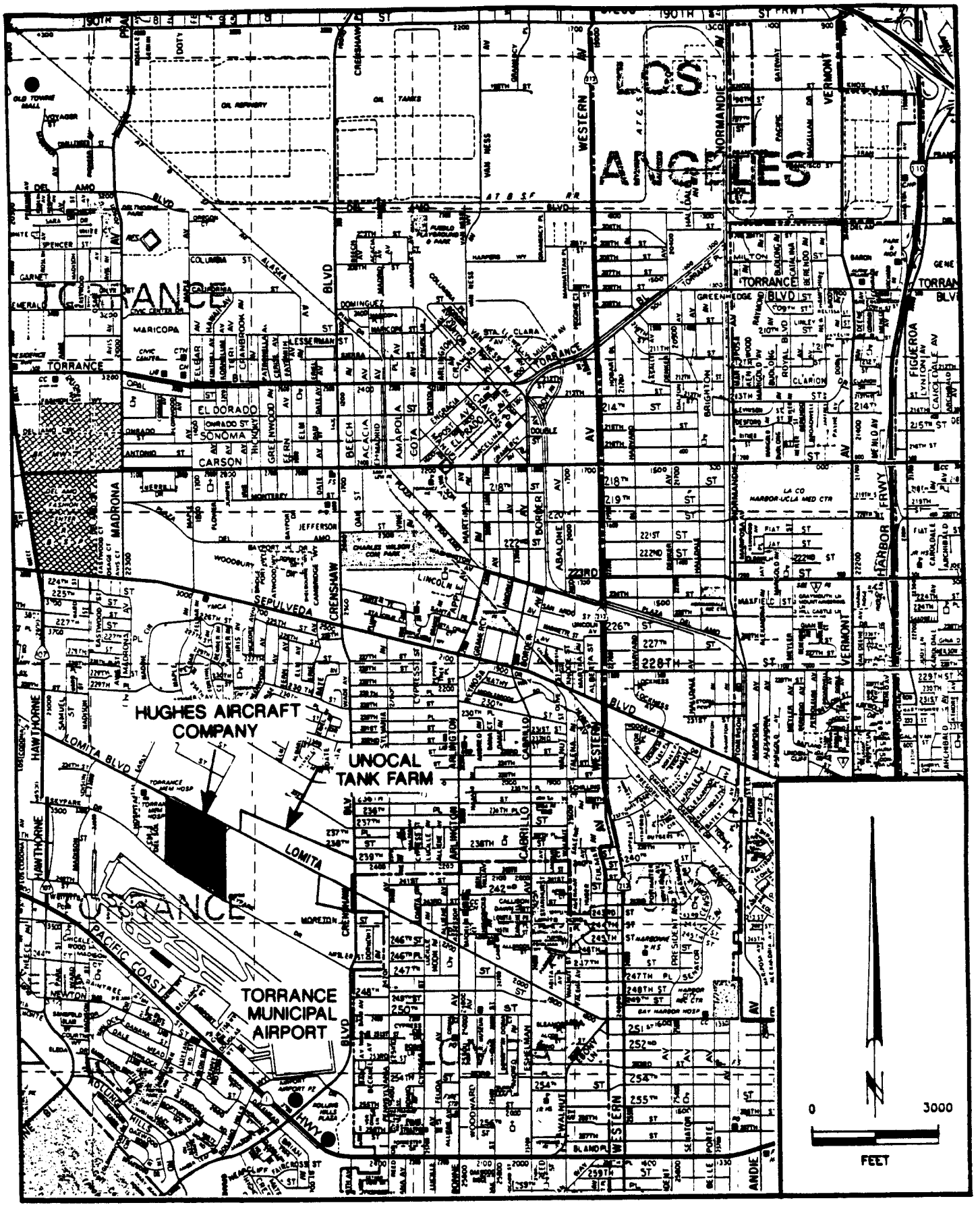

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FIGURE 1. SITE LOCATION

HARGIS + ASSOCIATES, INC.

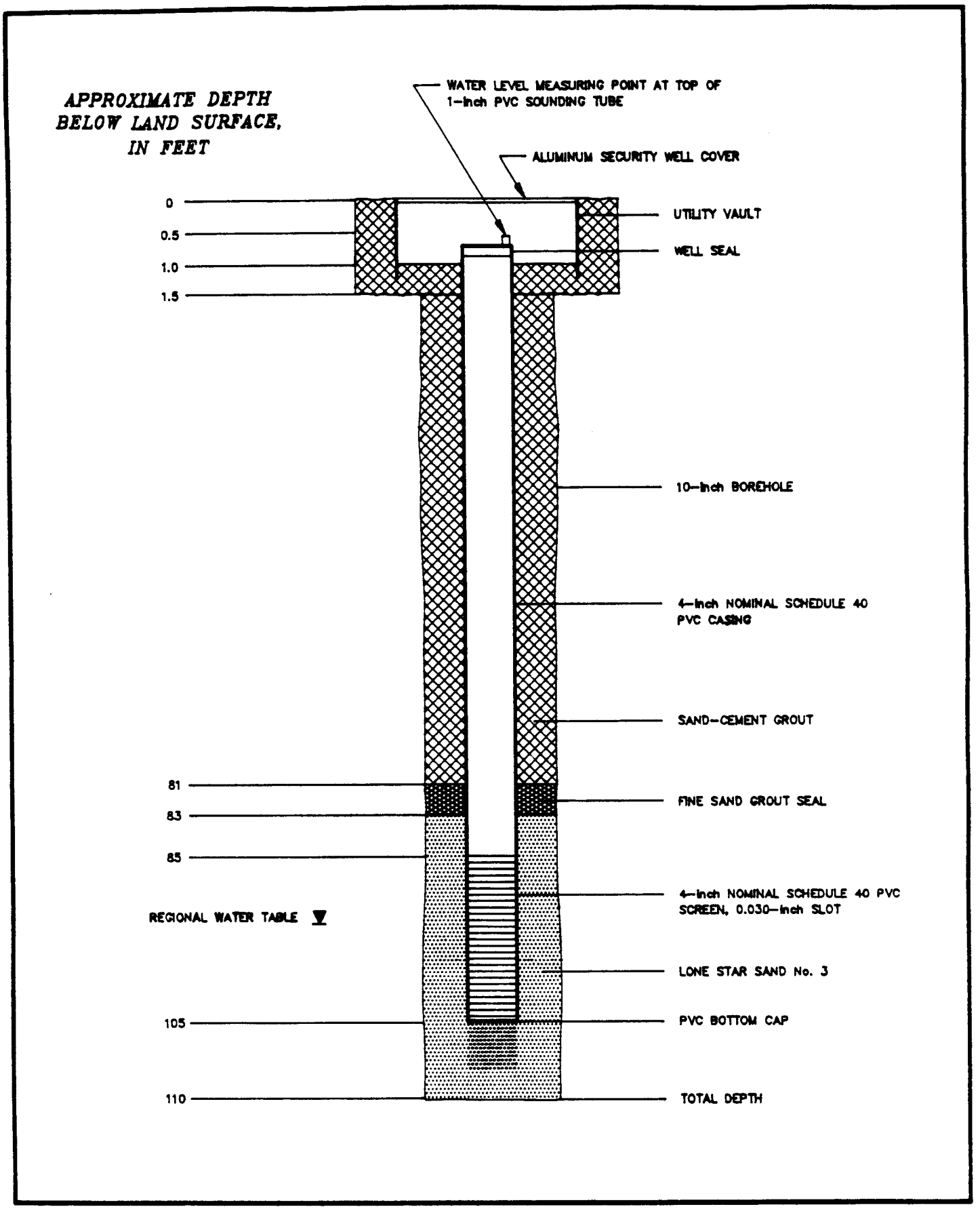

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FIGURE 3. PROPOSED MONITOR WELL CONSTRUCTION DIAGRAM

HARGIS + ASSOCIATES, INC.

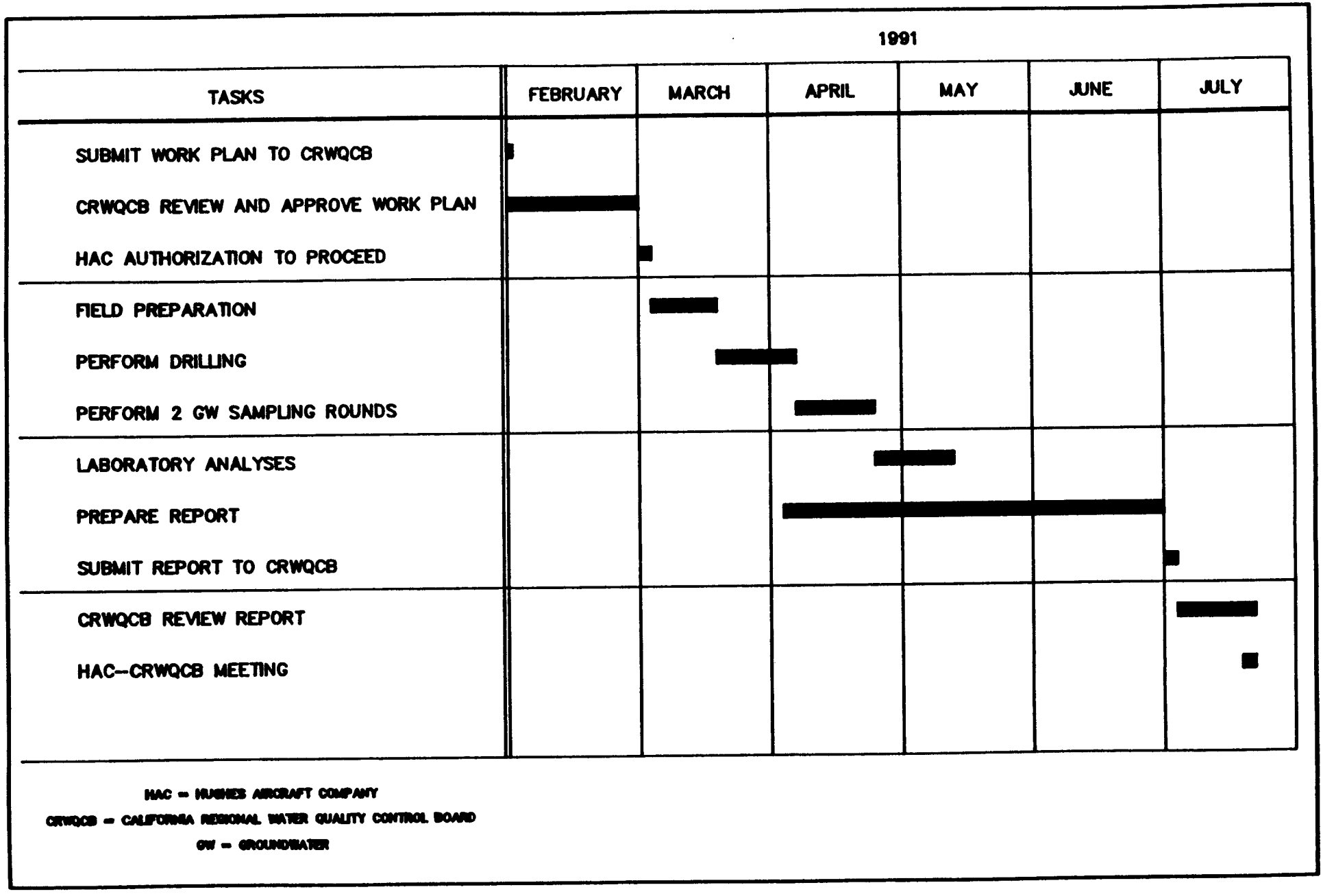

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FIGURE 4. ESTIMATED PROJECT SCHEDULE

HARGIS + ASSOCIATES, INC.

Appendix A

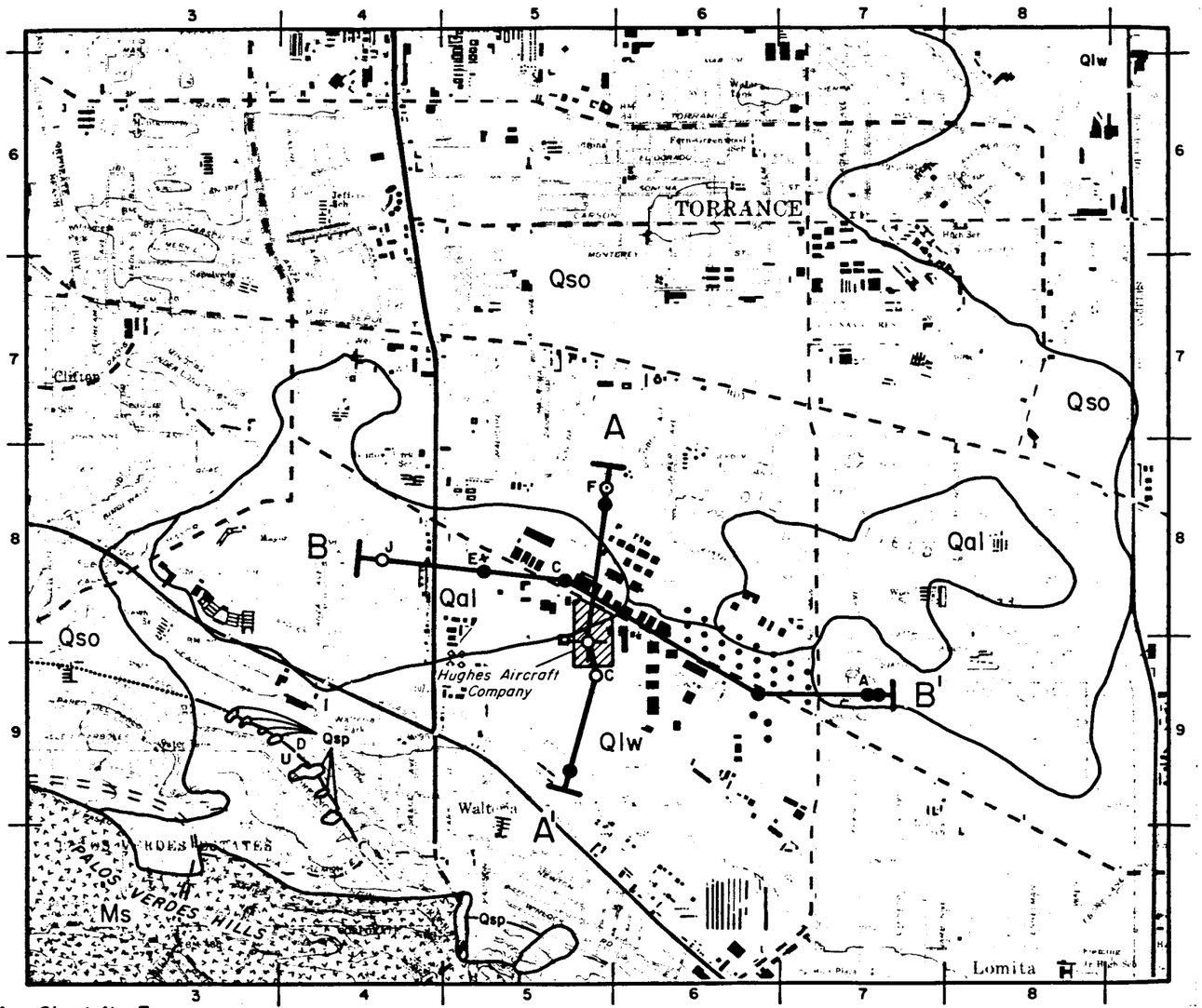
APPENDIX A

DATA FROM 1983 SOLVENT TANK INVESTIGATION

APPENDIX A

DATA FROM 1983 SOLVENT TANK INVESTIGATION

Note: Tables and Figures in this appendix were originally published in a report prepared by Hargis & Montgomery, Inc., 1983b. Investigation of Groundwater Quality and Regional Hydrogeologic Conditions, Hughes Aircraft Company, Electron Dynamics Division, Torrance, California. Prepared for Hughes Aircraft Company, Torrance, California; August 29, 1983.



Map Sheet No. 7

EXPLANATION

QUATERNARY

Holocene

Qal — RECENT ALLUVIAL DEPOSITS
Gravel, sand, silt, and clay. Coarser materials highly permeable.

UNCONFORMITY

Upper Pleistocene

Qso — OLDER DUNE SAND
Fine to medium sand with silt, and gravel lenses.

UNCONFORMITY

Qlw — LAKEWOOD FORMATION
Terrace cover sands, Palo Verdes sand, and other deposits consisting of silt, sand, and gravel. Moderately permeable.

LOCAL UNCONFORMITY

Lower Pleistocene

Qsp — SAN PEDRO FORMATION
Sand, gravel, silt, and clay, thick bodies of sand and gravel yield large quantities of water to wells.

UNCONFORMITY

TERTIARY

Miocene

Ms — MONTEREY FORMATION
Mudstone, diatomite, and mudstone.

D/U — TRACE OF FAULT
Dashed where inferred, dotted where concealed by deposits of Recent Age; U, upthrown side; D, downthrown side.

CONTACT

NOTE: BASE MAP MODIFIED FROM POLAND AND OTHERS, 1959.

WELLS

- ABANDONED
- TEST HOLE, NEVER PUMPED
- NO RECORD OF ABANDONMENT
- WELL PUMPED

Sources: L.A.C.F.C.D. Well Records and California Dept. of Water Resources Watermaster Report, 1982

A — A' LINE OF CROSS SECTION

Map Sheet and Grid numbers refer to L.A.C.F.C.D. Well Numbering System (Refer to Appendix D, Figure D-1)

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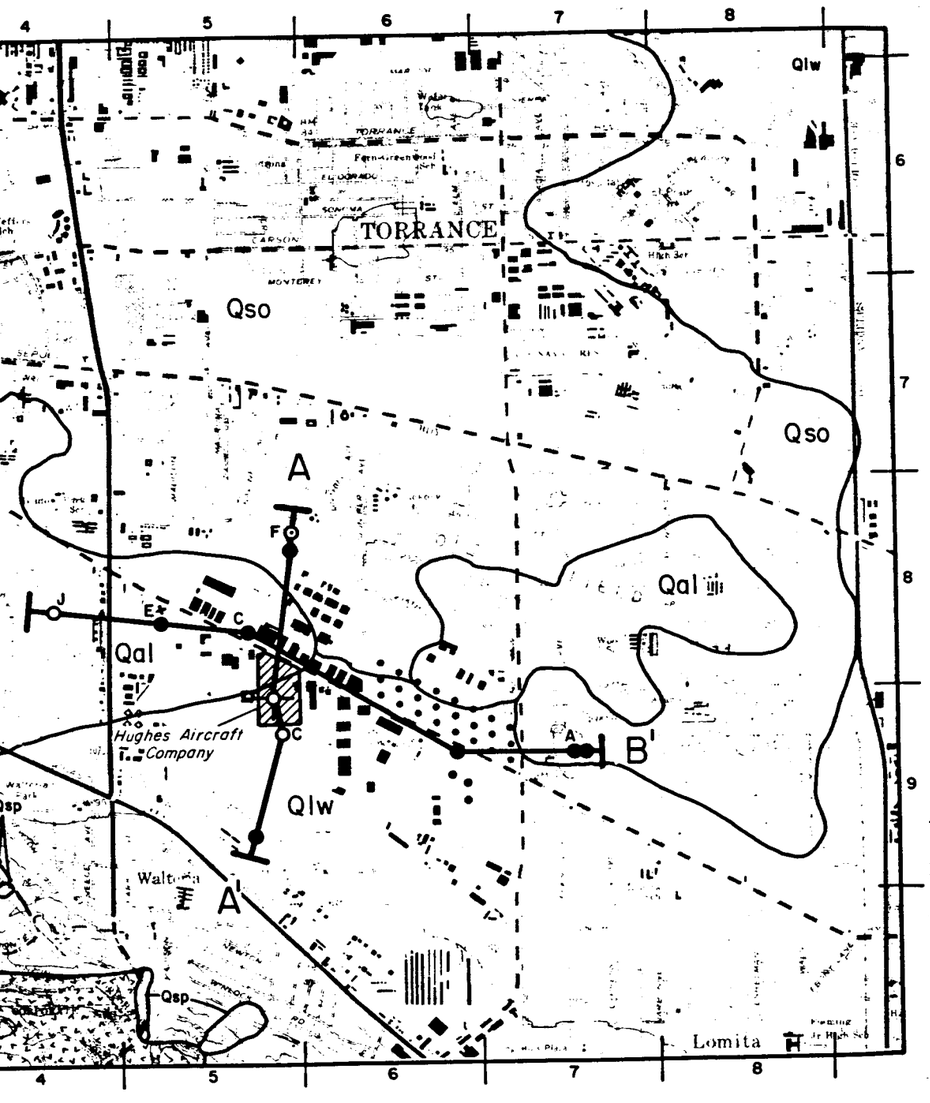
HUGHES AIRCRA

TORRANCE, CA

GEOLOGI

HARGIS & MONTGOMER
CONSULTANTS IN HYDROGE
Tucson, Arizona



EXPLANATION

Holocene	Qal	**RECENT ALLUVIAL DEPOSITS** Gravel, sand, silt, and clay. Coarser materials highly permeable.	QUATERNARY
		UNCONFORMITY	
Upper Pleistocene	Qso	**OLDER DUNE SAND** Fine to medium sand with silt, and gravel lenses.	
		UNCONFORMITY	
	Qlw	**LAKEWOOD FORMATION** Terrace cover sands, Palo Verdes sand, and other deposits consisting of silt, sand, and gravel. Moderately permeable.	
		LOCAL UNCONFORMITY	
Lower Pleistocene	Qsp	**SAN PEDRO FORMATION** Sand, gravel, silt, and clay, thick bodies of sand and gravel yield large quantities of water to wells.	
		UNCONFORMITY	
Miocene	Ms	**MONTEREY FORMATION** Mudstone, diatomite, and mudstone.	TERTIARY

TRACE OF FAULT
Dashed where inferred, dotted where concealed by deposits of Recent Age; U, upthrown side; D, downthrown side.

CONTACT

NOTE: BASE MAP MODIFIED FROM POLAND AND OTHERS, 1959.

WELLS

- ABANDONED
- TEST HOLE, NEVER PUMPED
- NO RECORD OF ABANDONMENT
- WELL PUMPED

Sources: L.A.C.F.C.D. Well Records and California Dept. of Water Resources Watermaster Report, 1982

A — A'
LINE OF CROSS SECTION

Map Sheet and Grid numbers refer to L.A.C.F.C.D. Well Numbering System (Refer to Appendix D, Figure D-1)

0 2,000 4,000
FEET

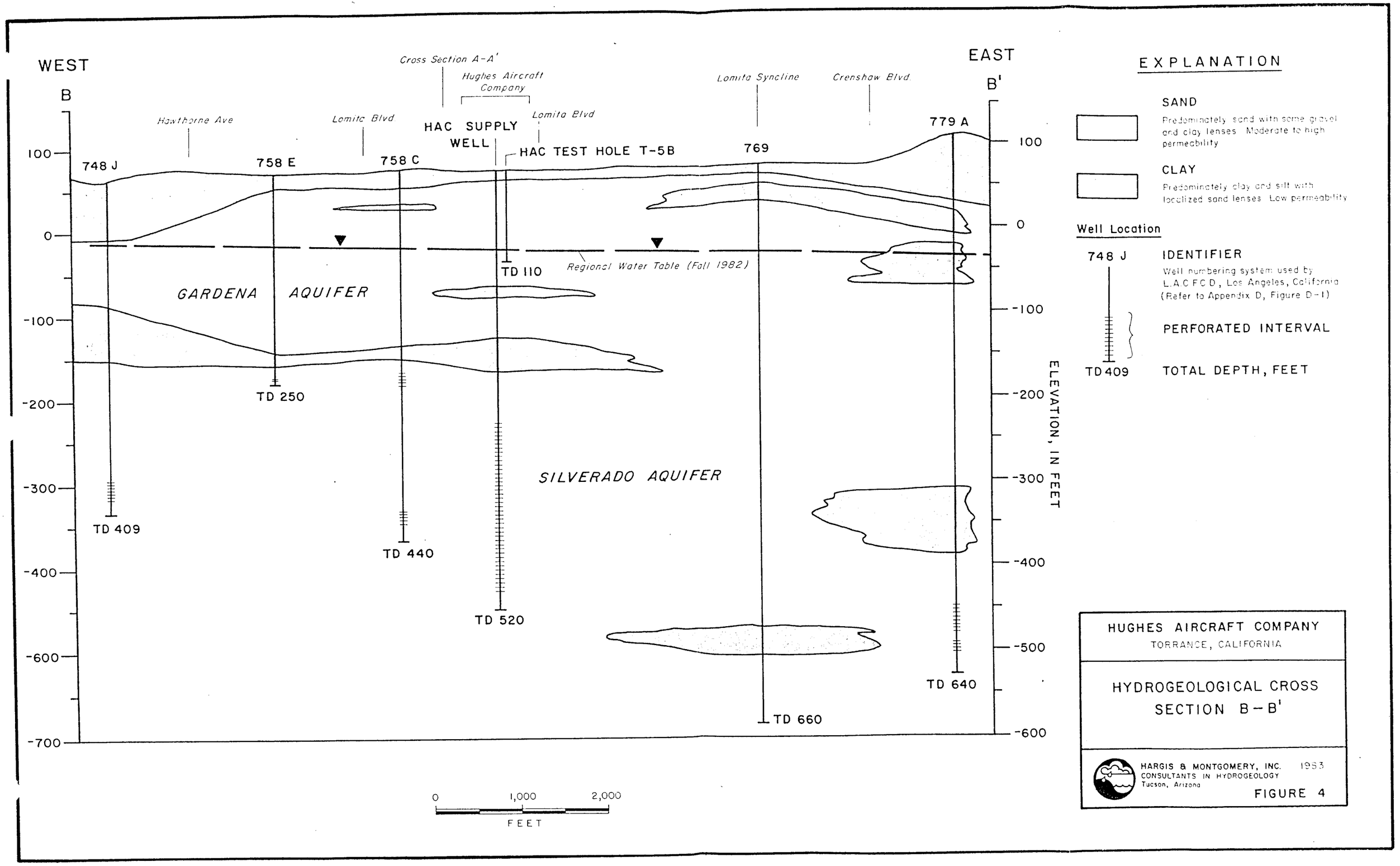
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

GEOLOGIC MAP

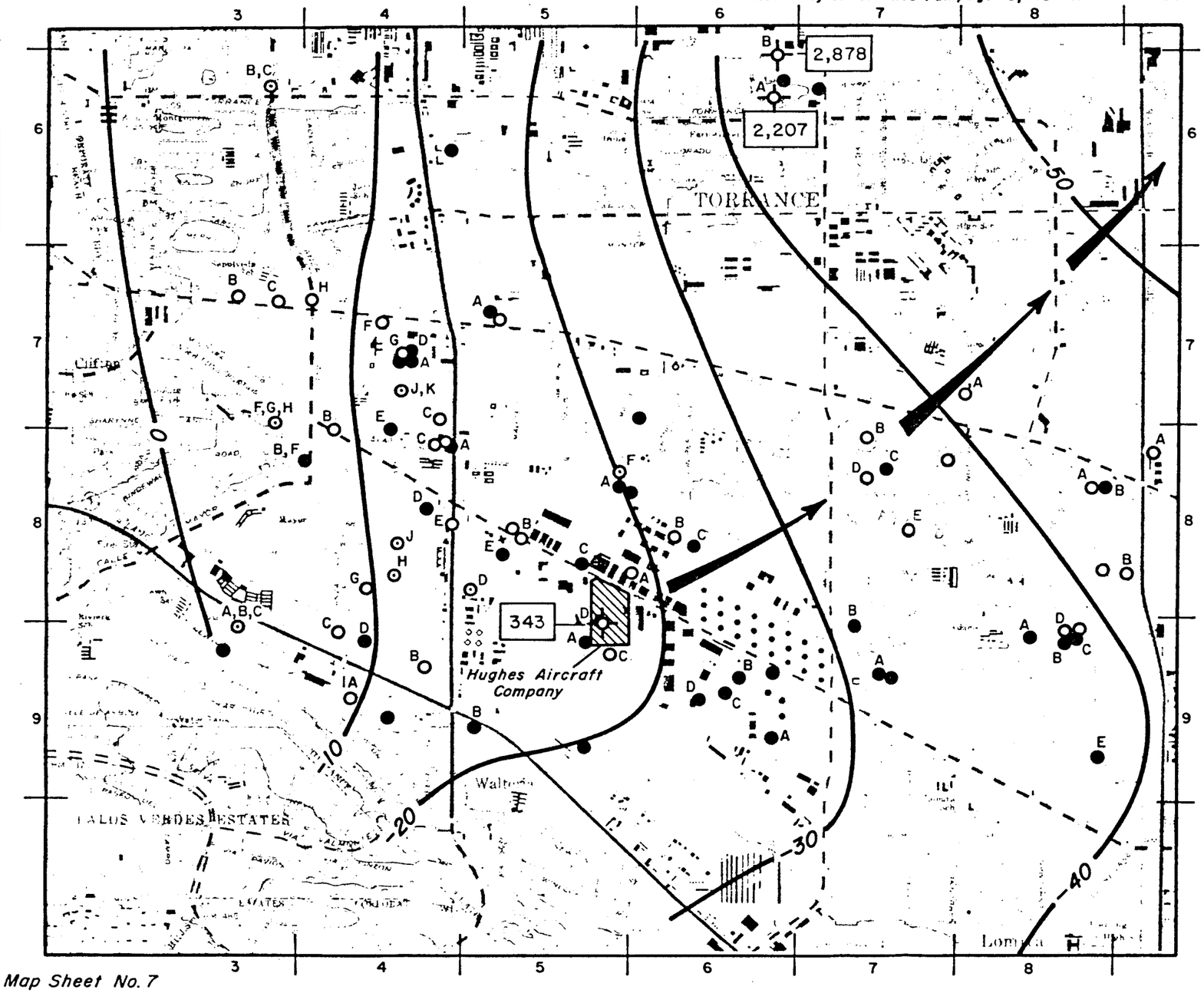
HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 2


WEST
EAST
B
B'
Cross Section A-A'
Hughes Aircraft Company
Lomita Syncline
Crenshaw Blvd.
Hawthorne Ave
Lomita Blvd.
HAC SUPPLY WELL
Lomita Blvd
HAC TEST HOLE T-5B
748 J
758 E
758 C
769
779 A
TD 110
Regional Water Table (Fall 1982)
GARDENA AQUIFER
TD 250
TD 409
TD 440
TD 520
SILVERADO AQUIFER
TD 660
TD 640
100
0
-100
-200
-300
-400
-500
-600
-700
ELEVATION, IN FEET
0
1,000
2,000
FEET
EXPLANATION
SAND
Predominately sand with some gravel and clay lenses. Moderate to high permeability
CLAY
Predominately clay and silt with localized sand lenses. Low permeability
Well Location
748 J
IDENTIFIER
Well numbering system used by L.A.C.F.C.D., Los Angeles, California (Refer to Appendix D, Figure D-1)
PERFORATED INTERVAL
TD 409
TOTAL DEPTH, FEET
HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA
HYDROGEOLOGICAL CROSS SECTION B-B'
HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona
1983
FIGURE 4

Total City of Torrance Pumpage: 6,145 Acre Feet in 1981-82



Map Sheet No. 7

EXPLANATION

WELLS

- ABANDONED
- TEST HOLE, NEVER PUMPED
- NO RECORD OF ABANDONMENT
- WELL PUMPED DURIING 1981-82
- 2,207 PUMPAGE IN ACRE FEET

-30 WATER LEVEL CONTOUR IN SILVERADO AQUIFER FALL 1982 (From L.A.C.F.C.D., 1982) Minus indicates elevation in feet below Mean Sea Level

DIRECTION OF GROUNDWATER MOVEMENT IN SILVERADO AQUIFER

Map Sheet and Grid numbers refer to L.A.C.F.C.D. Well Numbering System (Refer to Appendix D, Figure D-1)

Data obtained from: L.A.C.F.C.D. Well Records and California Dept. of Water Resources Watermaster Report, 1982

0 2,000 4,000
FEET

HUGHES AIRCRAFT COMPANY
TORRANCE, CALIFORNIA

REGIONAL WATER LEVEL CONTOURS FALL 1982

HARGIS & MONTGOMERY, INC.
CONSULTANTS IN HYDROGEOLOGY
Tucson, Arizona

1983

FIGURE 5

Appendix B

APPENDIX B
CHAIN-OF-CUSTODY PROCEDURES

The chain-of-custody procedure includes sample labels, field log, chain-of-custody forms, and sample transmittal documents. Sample labels will be filled out and attached to sample containers at the time of sampling to prevent misidentification of samples. Sample labels include the following information:

- sample identification
- date and time of collection
- place of collection
- name of collector
- analysis to be performed
- special instructions

A field log will be maintained to record observations and information obtained during sampling. The field log includes:

- location of sample point
- number of samples collected
- description of sample point and sample methods
- date and time of collection
- sample identification
- field observations
- the field parameters pH, temperature, and EC

The chain-of-custody form will be included with all samples delivered to the laboratory. The chain-of-custody form includes:

- sample identification
- date samples
- time sampled
- type of sample container
- type of analyses requested.

APPENDIX B

CHAIN-OF-CUSTODY PROCEDURES

H

HUGHES

GHES AIRCRAFT COMPANY

AVOID VERBAL ORDERS

TO S. Chao	SOURCE CODE 79 | 11 |	BLDG. E 4	M/S M 133	EXT. 6-4017
FROM P. Mahlow, Environ. Health and Safety	SOURCE CODE 96 | 05 |	BLDG. 237	M/S 1101	EXT. 5032
SUBJECT Analysis of Soil Sample			DATE 8 / 3 / 83	

Please analyze soil samples as per instructions for "EPA Priority Solvents". This analysis is requested by Latham and Watkins and the report should be sent to them, attention Bryant Danner, 555 So. Flower St., Los Angeles, CA 90071. The charge number for this analysis and any previous related work is 1550-000-1435-99 MISCELLANEOUS

added 8/15/83

CAUTION DO NOT WRITE ON THIS PAD. This paper is NCR self-duplicating stock. Tear off as many copies as required, and write on a hard surface.

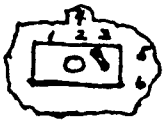
SIGNATURE

D 15 REV MAR 80

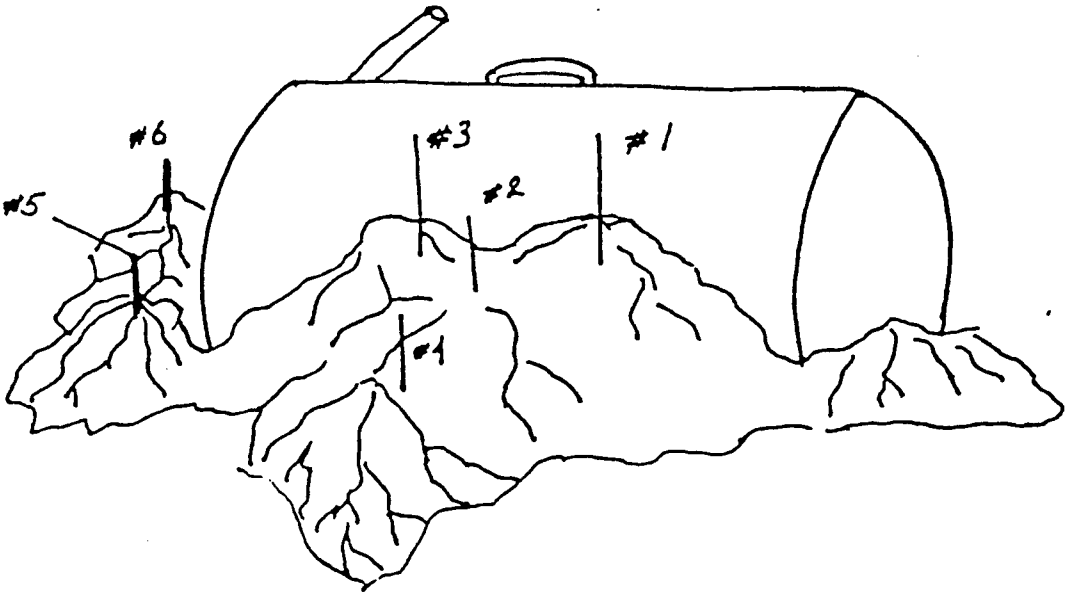
SOIL SAMPLE 8/3/83

TOP VIEW

XXXXXXXXXXX FENCE LINE



← N



SOIL HEIGHT FOR LOCATIONS 1, 2, 3
VARIED FROM 4 TO 4½ FEET
SOIL SAMPLES AT 1' DEPTH
2½' "
3½ "

SOIL VARIED IN HEIGHT FROM 2½' TO 3'
SOIL SAMPLES 4, 5, 6
TAKEN AT DEPTH OF 1'.

SOIL IN FRONT OF TANK VARIED TO HEIGHT OF APPROXIMATELY 18"

SOIL AT NORTH END OF TANK WAS SLIGHTLY HIGHER THAN 18" BUT SUBSTANTIALLY LESS THAN AT SOUTH END WHERE SAMPLES TAKEN OF GREATEST ACCUMULATIONS.

MANUFACTURING PROCESS LABORATORIES

- ANALYSIS REPORT SHEET -

TO: Bryant Danner

SOURCE CODE / /

DATE: 8-12-83

LOCATION / BLDG / MS / EXTENSION

REFERENCE/ LOG NO. 3427

CHARGE NO. 1550-000-1435

HOURS CHARGED: 48

TYPE OF SAMPLE: Soil Samples

TEST RESULTS: Twelve (12) soil samples were analyzed for organics according to the protocal set forth in the EPA publication EPA SW-846 "Test Methods for Evaluating Solid Wastes" section 5020 and 3550. The result is summerized in the following table.

Component Conc. PPM	Dichloroethene	Freon	1,1,1 Trichloroethane	Trichloroethene	Tetrachloroethene	PAH's
Sample No A (1)				0.35	0.24	0.3
A (2½)				0.01	0.09	
A (3½)				0.20	0.33	
B (1)				0.12	0.39	1.3
B (2½)			0.07	1.34	1.27	1.3
B (3½)				0.11	0.34	0.3
C (1)	0.14	0.06	0.25	3.09	4.00	2.0
C (2½)				0.05	0.07	
C (3½)				0.21	0.18	2.0
Small Pile #1			0.01	0.47	0.13	
Small Pile #2				0.25	0.12	0.2
Small Pile #3			0.05	0.09	0.29	1.3

If there are any questions regarding this report, contact: CONTROL CENTER
Refer samples by log number.
R4/M133
616-9175 or 616-402

ANALYST:

Dr CHRIS LEE
Name

Group Leader
Title

REVIEWED AND APPROVED BY:

S.C. Chao

S.C. Chao, Ph.D., Head
Manufacturing Process Laboratorie
Process Engineering

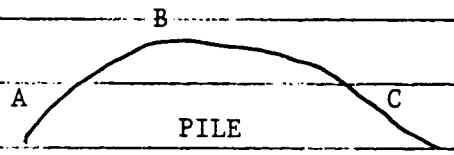
MANUFACTURING PROCESS LABORATORIES

- ANALYSIS REPORT SHEET -

* Total Concentration of Polyunclear Hydrocarbon Compounds:

Phenanthrene, Methylphenanthrene, Phenylnaphthalene, Pyrene, Fluoanthene, methylpyrenes, Benzo(g,h,i)fluoranthene, Benzo(a)anthracene, Chrysene, Benzo(c) phenanthrene, Benzo(x)fluoranthene.

* (1) = 1 foot deep sampling, (1½) = 1½ feet deep sampling, etc.



FIRE DEPARTMENT
CITY OF TORRANCE
FINAL

PERMIT

HAVING MADE APPLICATION IN DUE FORM, THE PERSON, FIRM OR CORPORATION BELOW NAMED IS HEREBY GRANTED A PERMIT TO: 1) Operate one 10,000 gal. and one 2,000 gal. U.G. Storage Tank

2) Operate one 3,000 gal. U.G. Storage Tank

AT: 1) 3100 W. Lomita Blvd., Torrance
2) 24120 Garnier, Torrance

ISSUED TO: NAME Hughes Aircraft Company

DBA Hughes Aircraft Company, Electron Dynamics Division *

ADDRESS 3100 W. Lomita Blvd., Torrance, CA 90509

UNDER THE PROVISIONS OF THE FIRE PREVENTION CODE, THE CONDITIONS AND LIMITATIONS OF THIS PERMIT ARE:

DATE ISSUED: 1/30/90 PERMIT GOOD UNTIL: 12/31/91

This Permit Must Be Posted In A Conspicuous Place On The Premises. Not Transferrable

FIRE CHIEF, R. S. Adams

for FIRE MARSHAL, R. R. Nanney

by V. Douglas Bergen, Sr. Fire Inspector

* cc: Hughes MPD, Box 2940, Torrance

This permit issued and accepted on condition that all provisions of the Fire Prevention Code of the City of Torrance as now adopted, or that may hereafter be adopted, shall be complied with. Any violations of these provisions may be grounds for the revocation of this permit. Any change in the use or occupancy of premises shall require a new permit.

FD 181

DEPARTMENT of BUILDING & SAFETY
CITY OF TORRANCE
BUILDING PERMIT

P.C. NO. 640922 | DATE 3/31/83 | PERMIT NO. 11986 B

TYPE CONSTRUCTION IN

GROUP M1-H2 | ZONE M-2 | DATE ISSUED 7/11/83 | ISSUED BY

3100 W. Lomita Blvd.

NEW ___ ADD ___ ALTER ___ REPAIR ___ DEMOLISH ___

SIZE IN SQUARE FEET		EXTERIOR WALL COVERING	
NUMBER OF ROOMS		INTERIOR WALL COVERING	
NUMBER OF STORIES		ROOF COVERING	
NO. OF BLDGS. NOW ON LOT		SIZE OF LOT	

USES OF EXISTING BLDGS. CANOPIES

DESCRIPTION OF WORK PROPOSED O.S.H. CYANIDE BOXES CONSTRUCTION OF CONCRETE BOXES ON GROUND FOR FLAMMABLE STORAGE, CYANIDE & ACID EQUIPMENT, CONCRETE SOLVENT TANK VAULT, CYANIDE THROUGHOUT PIT, CONCRETE BOXES FOR P.E. TANKS & LIQUIDS

MAJOR HWY. YES ☐ NO ☐ STATE HWY. YES ☐ NO ☐

BUILDING SETBACK	YARD	CL	STREET	R/W
FRONT P.L.		50	Lomita	100
SIDE STREET P.L.				
INT. SIDE P.L.				

MAP NO. 96	FEES		VALUATION	WD
			$ 75,000	
PLAN CHECK FEE	$ 275	60	BLDG. PERMIT FEE	$ 424 00
MAPPING			CONSTRUCTION TAX	750 00
STATE MANDATED			PARK-REC. TAX UNITS	
ENERGY FEE				
OWNER/BLDR NOTIFICATION			W/O	
L.A. COUNTY MOBILE HOME			MAIL-IN	
TOTAL	$ 275	60	MICROFILM FEE	5 25
UNDERGROUND UTILITIES REQ'D. YES ☐ NO ☒			TOTAL	$ 1179 25
HILLSIDE YES ☐ NO ☒				

TITLE 24 APPLIES TO ALLOWABLE HEATING SYSTEM

YES ☐ NO ☐ BONNET CAPACITY _____ BTU

PLANNING DEPT. CASE NO. CUP 76-9

Plans out for code 5/26/83

APPROVALS	DATE	INSPECTOR'S SIGNATURE
TRENCHES, FORMS, LOCATION, ETC.	5/10/83	
FLOOR JOISTS/MESH		
FRAME		
PANEL STEEL		
INSULATION		
ROOF NAILING		
DRYWALL/LATH, INT.		
SIDING/LATH, EXT.		
FINAL	11/4/85	

FOR APPLICANT TO FILL IN

JOB ADDRESS 3100 WEST LOMITA BLVD

LOT ___ BLOCK ___ TRACT Vol A.S. Wendu 1878.34 AC Rancho Los Palos Verdes

OWNER HUGHES AIRCRAFT Co TEL. NO. ___

ADDRESS ___

ARCHITECT OR ENGINEER ALBERT C. MARTIN & ASSOCIATES

ADDRESS 445 S. FIGUEROA ST.

LIC. NO. ___ TEL. NO. ___

OWNER/BUILDER DECLARATION

Section 7031.5 of the California Business and Professions code provides as follows:

"Each county or city which requires the issuance of a permit as a condition precedent to the construction, alteration, improvement, demolition or repair of any building or structure shall also require that each applicant for such a permit file as a condition precedent to the issuance of a permit a statement which he has prepared and signed stating that the applicant is licensed under the provisions of this chapter, giving the number of his license and stating that it is in full force and effect, or, if the applicant is exempt from the provisions of this chapter, the basis of the alleged exemption. Any violation of this section by any applicant for a permit shall be subject to a civil penalty of not more than five hundred dollars ($500.00)."

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale. (Section 7044, Business and Professions code: The contractor's license law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner/builder will have the burden of proving that he did not build or improve for the purpose of sale.)

☒ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project. (Section 7044 of the Business and Professions code: The contractor's license law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the contractor's license law.)

☐ I, as owner, am exempt under section ___ B and P code, for the reason: ___

(Signature) (Date)

LICENSED CONTRACTOR'S DECLARATION

I hereby declare that I am licensed under the provisions of Chapter 9 (commencing at section 7000) of Division 3 of the Business and Professions code, and my license is in full force and effect.

License Class ___ State Lic. No. ___ City Lic. No. ___

Contractor/Agent ___ (Signature) (Date)

Contractor's Name ___

Address ___ Phone ___

WORKER'S COMPENSATION DECLARATION

I hereby declare that I have a certificate of consent to self insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Labor Code Section 3800).

Policy No. ___

Company ___

☐ A certified copy is hereby furnished.

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE

(This section need not be completed if the permit is for one hundred dollars ($100.00) or less)

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation laws of the State of California.

(Signature) (Date)

NOTICE TO APPLICANT: If after making this certificate of exemption, you should become subject to the Worker's Compensation laws of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Section 3097 California Civil Code).

Lender's Name: N/A

Address: ___

RIGHT OF ENTRY

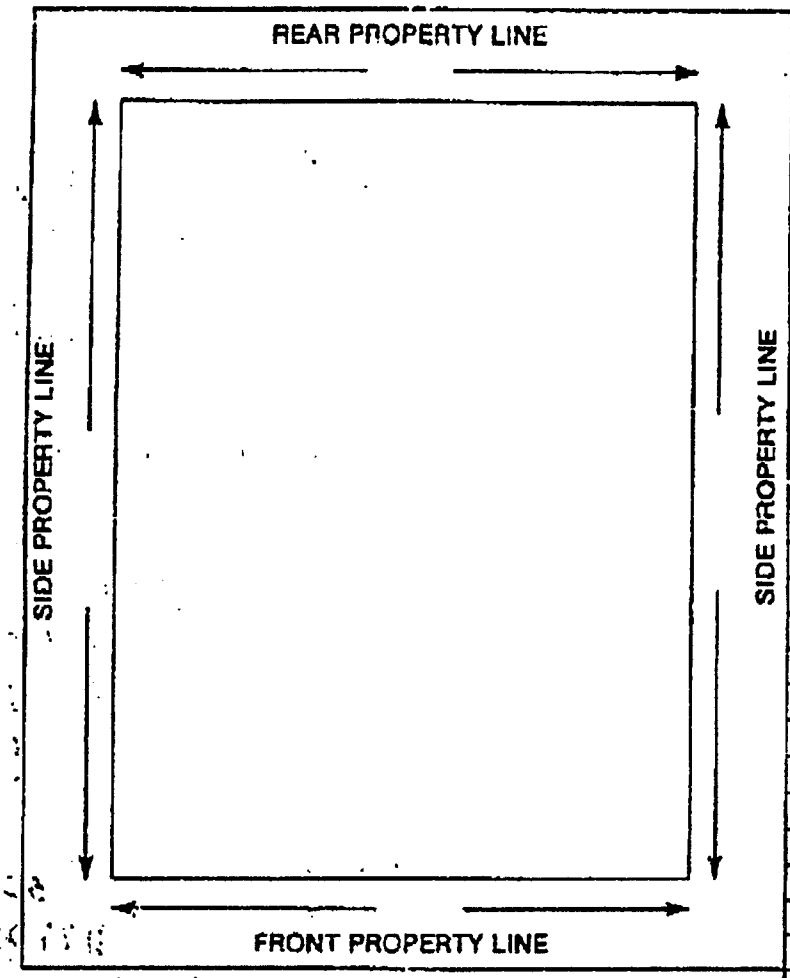
I certify that I have read this application and state that the above information is correct. I agree to comply with all City and applicable County ordinances, and State laws relating to building construction, and hereby authorize representatives of the City to enter upon the above mentioned property for the purpose of inspections.

(Signature) (Date)

VALID ONLY WHEN MACHINE STAMPED — VALIDATION OF THIS PERMIT SHALL NOT BE HELD TO PERMIT OR BE AN APPROVAL OF THE VIOLATION OF ANY OF THE PROVISIONS OF THE CITY OF TORRANCE CODE.

Inspector 1

BUILDING PERMIT No. 11986 B



CORRECTIONS AND FIELD NOTES

5-22-85 So. East side Footing at LN Tank Fir Blk. wall Northerly section OK to grout at 4 Ft. -- Bryan

5/29/85 - OK to grout Art. Lift Bryan

6-4-85 - OK to grout wall & Planter Area - Bryan

6/10/85 - OK to grout - Bryan

DEPARTMENT APPROVALS FOR OCCUPANCY

	INITIAL	DATE
ENGINEERING		
GRADING		
ZONING		
FIRE		
OTHER		
PLANNING		
AIRPORT		
TRANSPORTATION		
LAND MANAGEMENT		
APPROVAL TO ISSUE C.O.		

South Coast
AIR QUALITY MANAGEMENT DISTRICT
9150 Flair Drive, El Monte, CA 91731

APPLICATION NUMBER:
110113

PERMIT TO CONSTRUCT

GRANTED AS OF 06/23/83

LEGAL OWNER OR OPERATOR

HUGHES AIRCRAFT COMPANY
3100 LOMITA BLVD.
P.O. BOX 2999
TORRANCE, CA 90509

ATTENTION: J.C. McTAGGART

The equipment described below and as shown on the approved plans and specifications and subject to the special condition, or conditions listed.

EQUIPMENT DESCRIPTION AND CONDITIONS:

STORAGE TANK, SOLVENT WASTE, 6'-3 1/2" DIA. X 9'-0" L., 2000 GALLONS CAPACITY.

-CONDITION-

THIS TANK MUST NOT BE USED TO STORE A PETROLEUM DISTILLATE HAVING A REID VAPOR PRESSURE OF 3.9 POUNDS OR GREATER.

Approval or denial of this application for permit to operate the above equipment will be made after an inspection to determine if the equipment has been constructed in accordance with the approved plans and specifications and if the equipment can be operated in compliance with all Rules of the South Coast Air Quality Management District.

Please notify C. CHANG at 572-6129 when construction of equipment is completed.

This Authority to Construct is based on the plans, specifications, and data submitted as it pertains to the release of air contaminants and control measures to reduce air contaminants. No approval or opinion concerning safety and other factors in design, construction or operation of the equipment is expressed or implied.

This Permit to Construct shall serve as a temporary Permit to Operate provided the Executive Officer is given prior notice of such intent to operate.

This Permit to Construct will become invalid if the Permit to Operate is denied or if this application is cancelled. THIS PERMIT TO CONSTRUCT SHALL EXPIRE TWO YEARS FROM THE DATE OF FILING OF APPLICATION unless an extension is granted by the Executive Officer.

Sanford M. Weiss, Director of Engineering

By

V. MOY
RECORDS SEC

VM:rr

30D344 Rev 1/83

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Make up Frame and Piston

WS 01

PERMIT to OPERATE

Vent Pipe with Strap

9150 FLAIR DRIVE, EL MONTE, CALIFORNIA 91731

M 37536

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

LEGAL OWNER OR OPERATOR: HUGHES AIRCRAFT COMPANY
3100 LOMITA BOULEVARD

EQUIPMENT LOCATED AT: TORRANCE, CALIFORNIA

APPL. NO. 110113

EQUIPMENT DESCRIPTION AND CONDITIONS:

STORAGE TANK, ID NO. J00R, 6'-3 1/2" DIA. X 9'-0" L., 2000 GAL. CAPACITY.

-CONDITION-

THIS TANK MUST NOT BE USED TO STORE A PETROLEUM DISTILLATE HAVING A REID VAPOR PRESSURE OF 3.9 POUNDS OR GREATER.

This initial permit must be renewed by 11/10/84 unless the equipment is moved, or changes ownership. If billing for annual renewal fee (Rule 301.f) not received by expiration date, contact office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

XXXXXXXXXX

VOID UNLESS VALIDATED

EXECUTIVE OFFICER

BY VIRGINIA HOY

DATE 04/24/84

76P235M-REV. 2-81

(17)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ANNUAL VALIDATION OF PERMIT TO OPERATE

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment together with original permit.

EQUIPMENT DESCRIPTION	SOLVENTS, MISC., STORAGE-OTHER	I.D. NO.	012911
EQUIPMENT LOCATED AT:	3100 W LOMITA BL BLDGS 230-231	APPL. NO.	110113
	TORRANCE CA 905090000	PERMIT NO.	M37536
LEGAL OWNER OR OPERATOR:	HUGHES AIRCRAFT CO, ELECTRON DYN DIV P.O. BOX 2999 J. MCTAGGART-B-230-T3N TORRANCE CA 905090000		00326029

Annual permit expires on 11/16/85 or an earlier date that equipment is moved, altered, or changes ownership. If next year's billing not received by expiration date, contact the SCAQMD.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

EXECUTIVE OFFICER

BY Maria A. Lang

DATE OCT 24 1984

114-02 (REV. 1-83)

203882

INVOICE

012911-14-90

For Information Call – 818-307-2200

Mail Remittance To: 9150 Flair Dr., El Monte, Ca. 91731

California Health and Safety Code Section 40510 and South Coast Air Quality Management District Rule 301 authorizes the District to charge permit fees on the equipment identified below.

EQUIPMENT LOCATED AT: 3100 W LOMITA BL

TORRANCE CA 90505

INVOICE DATE 11/19/90

ANNUAL BILL MONTH NOVEMBER

LEGAL OWNER OR OPERATOR: CO. ID. 012911
HUGHES AIRCRAFT CO,MICRO PD DV&ELC D DIV
3100 W LOMITA BL
TORRANCE CA 90505

Pd 11/7/90

TRANSACTION NUMBER	TRANSACTION DATE	REFERENCE NUMBER	DESCRIPTION	TRANSACTION AMOUNT	TRANSACTION BALANCE
01349396	091790	197876	NATURAL GAS SECOND NOTICE	150.00	150.00
01349397	091790	189127	SURFACE PREP TANK SECOND NOTICE	150.00	150.00
01349398	091790	189124	SURFACE PREP TANK SECOND NOTICE	150.00	150.00
01349399	091790	195514	SOLDERING EQUIPMENT, ROBOTIC SECOND NOTICE	150.00	150.00
01349400	091790	209996	SOLVENT RECOVERY STILL SECOND NOTICE	150.00	150.00
01349401	091790	226423	METHYLENE CHLORIDE TANK SECOND NOTICE	150.00	150.00
01349402	091790	233325	MISC MATERIALS PRODUCTION SECOND NOTICE	150.00	150.00
01349403	091790	233324	TANK CHEMICAL MILLING SECOND NOTICE	150.00	150.00
01349404	091790	233323	ORGANIC CHEMICALS MISC PRODUC SECOND NOTICE	150.00	150.00
01349405	091790	233322	MISC MATERIALS STRIPPING SECOND NOTICE	150.00	150.00
01353196	091790	M37536	STORAGE TANK OTHER SOLVENTS N SECOND NOTICE	150.00	150.00
01353197	091790	M38522	ABRASIVE BLASTING (CABINET/MA SECOND NOTICE	150.00	150.00
01353198	091790	M41119	BAGHOUSE - VALID FOR INACTIVA SECOND NOTICE	150.00	150.00
01353199	091790	M41121	ABRASIVE BLASTING (CABINET/MA SECOND NOTICE	150.00	150.00
01353200	091790	M41151	ABRASIVE BLASTING (CABINET/MA SECOND NOTICE	150.00	150.00

REMARKS:

BALANCE NOW DUE

CONTINUED

If payment not received by application/permit will be delinquent.
If payment not received by application/permit will expire. Operation of equipment without a permit subjects owner or operator to misdemeanor or civil penalties for each day of operation.

Please return duplicate copy with remittance. *"Make check payable to South Coast A.Q.M.D."*

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

For EPA Regional Use Only	EPA United States Environmental Protection Agency Washington, DC 20460 # Hazardous Waste Permit Application # Part A *(Read the Instructions before starting)*	For State Use Only
Date Received Month Day Year		

I. ID Number(s)

A. EPA ID Number	B. Secondary ID Number *(if applicable)*
CAD041666819	

II. Name of Facility

HUGHES AIRCRAFT COMPANY

III. Facility Location *(Physical address not P.O. Box or Route Number)*

A. Street: 3100 W LOMITA BLVD

Street *(continued)*:

City or Town	State	ZIP Code
TORRANCE	CA	90505-

County Code *(if known)*	County Name
LA	LOS ANGELES

B. Land Type	C. Geographic Location		D. Facility Existence Date
(enter code)	*LATITUDE (degrees, minutes, & seconds)*	*LONGITUDE (degrees, minutes, & seconds)*	Month Day Year
P	33 48 37N	118 20 25W	04 01 1966

IV. Facility Mailing Address

Street or P.O. Box: SAME

City or Town	State	ZIP Code
SAME		SAME -

V. Facility Contact *(Person to be contacted regarding waste activities at facility)*

Name *(last)*	*(first)*
WEAVER	JAMES

Job Title	Phone Number *(area code and number)*
HEAD ENV RH LT HS F	213-517-6579

VI. Facility Contact Address *(See Instructions)*

A. Contact Address Location	Mailing	B. Street or P.O. Box
X		

City or Town	State	ZIP Code
		-

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Form Approved. OMB No. 2050-0034 Expires 12-31-91
GSA No. 0245-EPA CT

EPA I.D. Number (enter from page 1)	Secondary ID Number (enter from page 1)
AD041666819	

VII. Operator Information (see instructions)

Name of Operator			
HUGHES AIRCRAFT COMPANY			
Street or P.O. Box			
POBOX 1042			
City or Town	State	ZIP Code	
EL SEGUNDO	CA	90245-	
Phone Number (area code and number)	B. Operator Type	C. Change of Operator Indicator	Date Changed (Month Day Year)
213-414-5000	P	Yes [ ] No [X]	

VIII. Facility Owner (see instructions)

A. Name of Facility's Legal Owner			
HUGHES AIRCRAFT COMPANY			
Street or P.O. Box			
POBOX 1042			
City or Town	State	ZIP Code	
EL SEGUNDO	CA	90245-	
Phone Number (area code and number)	B. Owner Type	C. Change of Owner Indicator	Date Changed (Month Day Year)
213-414-5000	P	Yes [ ] No [X]	

IX. SIC Codes (4-digit, in order of significance)

Primary		Secondary	
	(description)		(description)
Secondary		**Secondary**	
	(description)		(description)

X. Other Environmental Permits (see instructions)

A. Permit Type (enter code)	B. Permit Number	C. Description
	SEE ATTACHED LIST	

PERMITS

FOR BLDGS. 230, 231, 232

TYPE	DESCRIPTION	PERMIT #
E	DEGSR	M30299
E	DEGSR	M01542
E	DEGSR	M48353
E	DEGSR	D10418
E	DEGSR	M54293
E	DEGSR	M54877
E	DEGSR	M58467
E	DEGSR	M33862
E	DEGSR	M30300
E	DEGSR	M48351
E	DEGSR	M37472
E	DEGSR	M58503
E	DEGSR	D00813
E	DEGSR	D03665
E	STILL	APP 209996
E	BAGHOUSE	M41119
E	DUST COLL	M60002
E	GASPUMP	906580
E	BEU4-STM	M57977
E	BEAD-BL	M57975
E	BEAD-BL	M57976
E	BEAD/BL	M38522
E	BEAD/BL	M41121
E	BEAD/BL	M41148
E	BEAD/BL	M41151
E	BEAD/BL	M41150
E	BEAD/BL	M41149
E	BLAST-ROOM BH	M57970
E	BEAD/BL	M57971
E	BEAD/BL	M57972
E	BEAD/BL	M57973
E	BEAD/BL	M57974
E	FUME SCRUBBER	M46864
E	FUME SCRUBBER	D17553
E	CLNG LN	D17554
E	CLNG LN	APP 187876
E	CURE OVN	M60003
E	SPRAY BOOTH	M60001
E	SPRAY BOOTH	M54294
E	SPRAY BOOTH	M54295
E	WST-SOLV TANK	M37536
E	TREAT PLANT	M58082
E	WAVE-SOLDERER	APP 195514
E	EMER GEN	D15373
E	EMER GEN	D15374
E	EMER GEN	D15375
E	CHAR/BROILER	D27243
E	FUME SCRUBBER	D08305
E	FUME SCRUBBER	D08306

(continued)

PERMITS

FOR BLDGS. 230, 231, 232

TYPE	DESCRIPTION	PERMIT #
E	GOLD PLATE	D08307
E	ELECTRO POLISH	D08308
E	ACID CLEANING	D08334
E	NICKEL CERAMIC	D08335
E	GENERAL NICKEL	D08336
E	COPPER	D08337
E	BOILER	D24342
E	BOILER	D24341
E	CLNG TANK	------
E	SOL STILL & DEGSR	D30374

PERMITS

FOR BLDG. 237

TYPE	DESCRIPTION	PERMIT #
E	DEGSR	M30304
E	DEGSR	M35640
E	DEGSR	M37835
E	EMER GEN	D15376
E	SCRUBBER HORIZ	D17085

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EPA I.D. Number (enter from page 1)	Secondary ID Number (enter from page 1)
C A D 0 4 1 6 6 6 8 1 9	

XI. Nature of Business (provide a brief description)

ENGINEERING AND MANUFACTURING OF ELECTRONIC COMPONENTS AND DEVICES

XII. Process - Codes and Design Capacities

A. PROCESS CODE - *Enter the code from the list of process codes below that best describes each process to be used at the facility. Twelve lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided in Item XIII.*

B. PROCESS DESIGN CAPACITY - *For each code entered in column A, enter the capacity of the process.*

1. AMOUNT - *Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process unit.*

2. UNIT OF MEASURE - *For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.*

C. PROCESS TOTAL NUMBER OF UNITS - *Enter the total number of units used with the corresponding process code.*

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	DISPOSAL:	
D79	INJECTION WELL	GALLONS; LITERS; GALLONS PER DAY; OR LITERS PER DAY
D80	LANDFILL	ACRE-FEET OR HECTARE-METER
D81	LAND APPLICATION	ACRES OR HECTARES
D82	OCEAN DISPOSAL	GALLONS PER DAY OR LITERS PER DAY
D83	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	STORAGE:	
S01	CONTAINER (barrel, drum, etc.)	GALLONS OR LITERS
S02	TANK	GALLONS OR LITERS
S03	WASTE PILE	CUBIC YARDS OR CUBIC METERS
S04	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	TREATMENT:	
T01	TANK	GALLONS PER DAY OR LITERS PER DAY
T02	SURFACE IMPOUNDMENT	GALLONS PER DAY OR LITERS PER DAY
T03	INCINERATOR	SHORT TONS PER HOUR; METRIC TONS PER HOUR; GALLONS PER HOUR; LITERS PER HOUR; OR BTU'S PER HOUR
T04	OTHER TREATMENT (Use for physical, chemical, thermal or biolgical treatment processes not occurring in tanks, surface impoundment or incinerators. Describe the processes in the space provided in Item XIII.)	GALLONS PER DAY; LITERS PER DAY; POUNDS PER HOUR; SHORT TONS PER HOUR; KILOGRAMS PER HOUR; METRIC TONS PER DAY; METRIC TONS PER HOUR; OR SHORT TONS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
GALLONS PER HOUR	E
GALLONS PER DAY	U
LITERS	L
LITERS PER HOUR	H
LITERS PER DAY	V
SHORT TONS PER HOUR	D
METRIC TONS PER HOUR	W
SHORT TONS PER DAY	N
METRIC TONS PER DAY	S
POUNDS PER HOUR	J
KILOGRAMS PER HOUR	R
CUBIC YARDS	Y
CUBIC METERS	C
ACRES	B
ACRE-FEET	A
HECTARES	Q
HECTARE-METER	F
BTU's PER HOUR	K

EPA I.D. Number (enter from page 1): C A D 0 4 1 6 6 6 8 1 9

Secondary ID Number (enter from page 1):

XII. Process - Codes and Design Capacities (continued)

EXAMPLE FOR COMPLETING ITEM XII (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line Number	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	C. PROCESS TOTAL NUMBER OF UNITS	FOR OFFICIAL USE ONLY
X 1	S 0 2	600	G	0 0 2	
X 2	T 0 3	20	E	0 0 1	
1	S 0 1	64.3	Y	0 0 1	
2	S 0 2	2000	G	0 0 1	
3					
4					
5	T 0 1	12000	E	0 0 4	
6					
7					
8					
9					
10					
11					
12					

NOTE: If you need to list more than 12 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for additional treatment processes in Item XIII.

XIII. Additional Treatment Processes (follow instructions from Item XII)

Line Number (enter numbers in sequence with Item XII)	A. PROCESS CODE	B. TREATMENT PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. TREATMENT PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	C. PROCESS TOTAL NUMBER OF UNITS	D. DESCRIPTION OF PROCESS
	T 0 4				
	T 0 4				
	T 0 4				
	T 0 4				

EPA I.D. Number (enter from page 1)	Secondary ID Number (enter from page 1)
C A D 0 4 1 6 6 6 8 1 9	

XIV. Description of Hazardous Wastes

A. EPA HAZARDOUS WASTE NUMBER - *Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR, Part 261 Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.*

B. ESTIMATED ANNUAL QUANTITY - *For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.*

C. UNIT OF MEASURE - *For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:*

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that processes that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. *Enter the first two as described above.*
2. *Enter "000" in the extreme right box of Item XIV-D(1).*
3. *Enter in the space provided on page 7, Item XIV-E, the line number and the additional code(s).*

2. PROCESS DESCRIPTION: *If a code is not listed for a process that will be used, describe the process in the space provided on the form (D.(2)).*

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. *Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.*
2. *In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.*
3. *Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.*

EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA HAZARD WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESS (1) PROCESS CODES (enter)	D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				Included With Above

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GSA No. 0246-EPA-OT

EPA I.D. Number (enter from page 1): C A D 0 4 1 6 6 6 8 1 9

Secondary ID Number (enter from page 1):

XIV. Description of Hazardous Wastes (continued)

Line Number	A. EPA HAZARDOUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES (1) PROCESS CODES (enter)	(2) PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F006	14.8	T	S01	
2	F001	3.0	T	S01	
3	F001	6.8	T	S01	
4	F003	Included with above			
5	F002	0.2	T	S01	
6	D007	1.6	T	S01	
7	D008	Included with above			
8	D006	300	P	S01	
9	D007	Included with above			
10	D008	Included with above			
11	F003	7.1	T	S02	
12	F005	Included with above			
13	D001	5.5	T	S01	
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					

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EPA I.D. Number (enter from page 1)	Secondary ID Number (enter from page 1)
C A D 0 4 1 6 6 6 8 1 9	

XIV. Description of Hazardous Waste (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 6.

Line Number	Additional Process Codes (enter)

XV. Map

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

XVIII. Certification(s)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Owner Signature	Date Signed

Name and Official Title (type or print)

Operator Signature	Date Signed
	2/20/91

Name and Official Title (type or print)

Ronald A. Forbes, Group Vice President

XIX. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (refer to instructions for more information)

ATTACHMENT A

Interim Status Document

Hughes Aircraft Company
3100 West Lomita Boulevard
Los Angeles County
Torrance, CA 90509

I. GENERAL CONDITIONS

1. Identification and general responsibilities of operator.

Hughes Aircraft Company, hereinafter called the operator and/or owner, shall comply with the provisions of the California Health and Safety Code, including Chapter 6.5 of Division 20, and with the Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes (Chapter 30, Division 4, Title 22 of the California Administrative Code). The following requirements set forth in Chapter 30, Division 4, Title 22, California Administrative Code, should be particularly noted:

(a) The owner or operator shall ensure that the operation of the facility will not imperil public health and safety, wildlife, domestic livestock, or the environment.

(b) The owner or operator shall allow the California State Department of Health Services or the local health agency to inspect the facility, take samples of wastes, and inspect pertinent records.

(c) The owner or operator shall maintain the qualified personnel and the equipment necessary to provide for the safe operation of the facility.

(d) The owner or operator shall notify the California State Department of Health Services of a proposed change in ownership of the facility, in the method of operation of the facility, or of proposed closure of the facility 30 days prior to such event.

(e) The operator shall report to the California State Department of Health Services, within 24 hours after occurrence, all accidents involving hazardous wastes which resulted in, or could have resulted in, a hazard to public health and safety, wildlife, domestic livestock, or to the environment.

2. Records.

The owner or operator shall file this Interim Status Document at the facility and at his place of business.

3. Operation plan.

Unless he has already done so, the owner or operator shall submit to the California State Department of Health Services within six months after receiving specific written notice from the Department to do so, an operation plan in accordance with Section 66376, Title 22 of the California Administrative Code.

4. Prohibited acts.

The owner or operator shall not do any of the following acts:

(a) Treat, store, or dispose of hazardous wastes which are not identified.

(b) Employ processes not described in the application.

(c) Make substantial modifications or additions to the facility.

5. Limitation.

The owner or operator shall comply with the conditions of this document and with any new or modified conditions which the California State Department of Health Services deems necessary to protect public health or the environment. A new interim status condition or a modification of an existing interim status condition shall become effective on the date that written notice of such change is received by the owner or operator.

NOTE: Unless explicitly stated otherwise, all cross references to items in this Interim Status Document shall refer only to items occurring within the same Part. All Parts are identified by Roman numerals. The items set forth in each Part shall apply to the owner, operator, and/or facility in addition to the items set forth in any preceding and/or following Part of this document.

II SPECIAL CONDITIONS

1. Storage of wastes.

(a) Hazardous waste shall not be stored at the facility for longer than one year without written approval from the California State Department of Health Services.

(b) If a hazardous waste is stored at the facility longer than one year, the owner or operator shall pay to the California State Department of Health Services a fee, as if the waste had been disposed of on land, in accordance with Article 8, Chapter 30, Division 4, Title 22 of the California Administrative Code. The fee shall be paid in the 13th month of storage.

(c) Hazardous waste shall be stored in a secure enclosure such as a building, room or fenced area, which shall prevent unauthorized persons from gaining access to the waste, and in a manner that will prevent spills. A caution sign shall be posted and visible from any direction of access or view of hazardous waste stored in such enclosure. Wording of caution signs shall be in English, "Caution-Hazardous Waste Storage Area-Unauthorized Persons Keep Out", and Spanish, "Cuidado! Zona de Residuos Peligrosos. Prohibida la Entrada a Personas No Autorizadas".

(d) Each hazardous waste storage area shall have a continuous base that is impervious to the waste to be stored and shall be designed and constructed so that any surface water runoff or spills can be contained.

2. Storage in tanks.

(a) Each hazardous waste storage tank situated above ground shall have a spill confinement structure (e.g., dike or trough) capable of holding the entire contents of the tank plus sufficient freeboard.

(b) Hazardous waste storage tanks shall be constructed of materials which are compatible with the wastes to be contained or shall be protected by liners which are compatible with those wastes.

(c) Prior to use, new, replacement, and repaired hazardous waste storage tanks and their appurtenances shall be certified by an engineer registered in California to be structurally sound and of adequate construction for the intended use.

(d) Each hazardous waste storage tank and storage area shall be individually marked with the internationally recognized hazard

identification system placards developed by the National Fire Prevention Association (NFPA).

(e) Valves on hazardous waste storage tanks shall be kept locked when the facility is unattended.

3. Storage in containers.

(a) Containers used for storing hazardous waste shall be in a condition such that the containers can be safely transported, handled or moved.

(b) Areas used for storing containers of hazardous waste shall be widely separated, or physical barriers shall be provided to ensure that commingling of incompatible hazardous wastes cannot occur if a container ruptures.

(c) A label shall be maintained on all containers in which hazardous wastes are stored for 90 days or more and records for the storage of all hazardous wastes shall be maintained pursuant to Section 66545, Title 22 of the California Administrative Code. Labels shall include the following information:

(1) Composition and physical state of the waste;

(2) Special safety recommendations and precautions for handling the waste;

(3) Statement or statements which call attention to the particular hazardous properties of the waste;

(4) Amount of waste and name and address of the person producing the waste; and

(5) Date of acceptance at the storage facility.

(d) Empty containers contaminated with hazardous materials shall be stored, handled, processed and disposed of as hazardous wastes.

4. Recycling.

(a) The mixing or blending of potentially incompatible materials and wastes for purposes of recovering resources, neutralizing wastes, or detoxifying wastes shall be carried out under controlled conditions to ensure that violent reactions, extreme heat, or fire do not occur and that toxic or flammable gases and vapors are not discharged into the atmosphere.

(b) If requested by the California State Department of Health Services in accordance with Article 12, Chapter 30, Division 4, Title 22, California Administrative Code, the owner or operator shall submit a written statement justifying having not recycled a waste which the Department has determined to be recyclable.

5. Management of powdered wastes.

To prevent hazardous waste from being blown by the wind, hazardous waste in the form of powder, dust or a fine solid shall be handled, treated, stored and disposed of in covered containers or, if the waste is not water reactive, shall be wetted as a slurry.

6. Management of asbestos wastes.

Asbestos-containing wastes shall be managed in accordance with the following instructions:

(a) Wastes in sealed, nonreturnable containers shall be handled, disposed of, and covered without opening, breaking, or rupturing the containers.

(b) Wetted wastes in bulk shall not be allowed to dry to such a state that airborne asbestos fibers would result.

(c) Dry wastes in bulk shall be thoroughly wetted to prevent the blowing of asbestos fibers.

(d) All asbestos-containing wastes destined for disposal at the facility shall be covered with at least six inches of compacted soil or nonhazardous solid waste within 24 hours after receipt at the disposal area or site.

7. Wastes prohibited.

Hazardous wastes described below shall not be handled at the facility:

(a) Extremely hazardous wastes as defined in Sections 66064 and 66685, Title 22, California Administrative Code, unless specifically approved by a written permit from the California State Department of Health Services.

(b) Burning wastes.

(c) Forbidden and Class A explosives as defined in Sections 173.51 and 173.53, Title 49, Code of Federal Regulations.

(d) Water-reactive wastes as defined in Section 66236, Title 22 of the California Administrative Code.

8. Management of incompatible wastes.

Each of the following categories of incompatible hazardous wastes shall be adequately separated during all handling, storage, and disposal operations:

(a) Alkalies and cyanides.

(b) Acids.

(c) Strong oxidizers.

9. Management of PCB wastes.

PCB wastes shall be managed in accordance with the requirements of Part 761, Title 40, Code of Federal Regulations.

10. Public water supply.

If a public water supply is used at the facility, the service connection shall be protected from contamination as specified in Section 7604, Title 17 of the California Administrative Code.

11. Fencing.

The perimeter of the hazardous waste area of the facility shall be secured by a well-maintained fence, capable of preventing the intrusion of livestock and of discouraging entry by unauthorized persons. If the entire facility is appropriately fenced, if the general public does not have access to the hazardous waste area, and if the hazardous waste area is posted with warning signs as described elsewhere in this document, no additional fence shall be required around the hazardous area unless the absence of such a fence could result in a hazard to health, safety, or the environment.

12. Operation at night.

When the facility is operated during hours of darkness, the operator shall provide sufficient lighting to ensure safe, effective management of hazardous wastes.

13. Warning signs.

Signs indicating that the facility, or the hazardous waste area of the facility, contains hazardous waste shall be placed on the perimeter

fence at locations where it is anticipated that hunters and other trespassers may enter the facility such as at trails, major drainages, and ridges. Wording of the signs shall be in English, "Caution-Hazardous Waste Area-Unauthorized Persons Keep Out", and Spanish, "Cuidado! Zona de Residuos Peligrosos. Prohibida la Entrada a Personas No Autorizadas".

14. Telephone or radio communications.

A telephone or radio for summoning aid in the event of an emergency shall be in workable condition and available for immediate use by personnel working in the hazardous waste area of the facility.

15. Safety showers.

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of safety showers. The safety showers shall be in workable condition and available for immediate use.

16. Eyewashes.

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of eyewashes. The eyewashes shall be in workable condition and available for immediate use.

17. First-aid kit.

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of industrial-type first-aid kits. The kits shall be maintained and available for immediate use.

18. Protective clothing.

The owner or operator shall provide to personnel working in the hazardous waste area of the facility adequate numbers of the following National Institute of Occupational Safety and Health (NIOSH) approved equipment if appropriate:

(a) Protective head gear and face masks.

(b) Chemically resistant apparel and gloves.

(c) Self-contained breathing apparatus and respirators with the approved cartridges.

19. Warning alarm system.

If at any time there is a sole employee on the premises, the employee shall have immediate access to an alarm or other communication device capable of summoning external emergency assistance.

III. SAFETY, EQUIPMENT, AND EMERGENCY RESPONSE

1. Identification number.

   The facility owner or operator shall have an identification number issued by the U.S. Environmental Protection Agency (EPA).

2. Notices.

   (a) If the owner or operator has arranged to receive hazardous waste from a foreign source, he shall notify the California State Department of Health Services in writing at least four weeks in advance of the date that the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

   (b) Before transferring ownership or operation of the facility during its operating life or during the post-closure care period, the owner or operator shall notify the new owner or operator in writing of the conditions of this document.

3. Analysis of waste.

   (a) (1) Before the owner or operator treats, stores, or disposes of a particular type of hazardous waste for the first time, he shall obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis shall contain all the information which must be known to treat, store, or dispose of the waste in accordance with the conditions of this document.

   (2) The analysis may include data developed for other purposes, and existing published or documented data on the hazardous waste or on waste generated from similar processes.

   (3) The analysis shall be repeated as necessary to ensure that it is accurate and up-to-date. At a minimum, the analysis must be repeated when the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed.

   (b) Upon the effective date of this document, the owner or operator shall follow a written waste analysis plan which describes the procedures which will be used to comply with Item 3 (a). The plan shall be subject to approval by the California State Department of Health Services and shall be kept at the facility. At a minimum, the plan shall specify:

(1) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;

(2) The test methods which will be used to test for these parameters;

(3) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(i) One of the sampling methods described in Appendix I, Part 261, Title 40, Code of Federal Regulations; or

(ii) An equivalent sampling method approved by the California State Department of Health Services.

(4) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date;

(5) Where applicable, the methods which will be used to meet any additional waste analysis requirements for specific waste management methods as specified elsewhere in this document.

4. Security.

(a) The owner or operator shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility.

(b) The facility shall have:

(1) A 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility; or

(2) (i) An artificial or natural barrier which completely surounds the active portion of the facility and which would prevent unauthorized entry; and

(ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

(c) Upon the effective date of this document, a sign with the legend, "Caution - Hazardous Waste Area - Unauthorized Persons Keep Out," shall be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend shall be written in Englig and Spanish, "Cuidado! Zona De Residuous Peligrosos. Prohibida La Entrada A Personas No Autorizadas", and shall be legible from a distance of at least 25 feet. Existing signs with a legend other than "Caution - Hazardous Waste Area - Unauthorized Persons Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

5. Inspections.

(a) The owner or operator shall inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing--or may lead to--release of hazardous waste constituents to the environment or a threat to human health. The owner or operator shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b) (1) The owner or operator shall follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) The schedule shall be subject to approval by the California State Department of Health Services.

(3) He shall keep this schedule at the facility.

(4) The schedule shall identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

(5) The frequency of inspection may vary for the items on the schedule. However, it shall be based on the rate of

possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas shall be inspected daily when in use. At a minimum, the inspection schedule shall include the items and frequencies called for elsewhere in this document.

(c) The owner or operator shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which shall be subject to approval by the California State Department of Health Services and which shall ensure that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall record inspections in an inspection log or summary. He shall keep these records for at least three years from the date of inspection. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

6. Personnel training.

(a) (1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the conditions of this document. The owner or operator shall ensure that this program includes all the elements described under Item 6 (a)(3).

(2) This program shall be directed by a person trained in hazardous waste management procedures, and shall include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(3) At a minimum, the training program shall be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable:

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Key parameters for automatic waste feed cut-off systems;

(iii) Communications or alarm systems;

(iv) Response to fires or explosions;

(v) Response to ground-water contamination incidents; and

(vi) Shutdown of operations.

(b) Facility personnel shall have successfully completed the program required in Item 6 (a) by the effective date of this document or within six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of this document shall not work in unsupervised positions until they have completed the training requirements of Item 6 (a).

(c) Facility personnel shall take part in an annual review of the initial training required in Item 6 (a).

(d) The owner or operator shall maintain the following documents and records at the facility:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job.

(2) A written job description for each position listed under Item 6 (d)(1). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but shall include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;

(3) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under Item 6 (d) (1); and

(4) Records that document that the training or job experience required under Items 6 (a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current personnel as required in Item 6 (d) 4 shall be kept until closure of the facility. Training records on former employees shall be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

7. Ignitable, reactive, or incompatible wastes.

(a) The owner or operator shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction. While ignitable or reactive waste is being handled, the owner or operator shall confine smoking and open flame to specially designated locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) The treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials shall be conducted so that it does not:

(1) Generate extreme heat or pressure, fire or explosion, or violent reaction;

(2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;

(3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) Damage the structural integrity of the device or facility containing the waste; or

(5) Through other like means threaten human health or the environment.

8. Maintenance and operation of facility.

The facility shall be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

9. Testing and maintenance of equipment.

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to ensure its proper operation in time of emergency.

10. Required aisle space.

The owner or operator shall maintain aisle space as needed to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency.

11. Arrangements with local authorities.

(a) Upon the effective date of this document, the owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at the facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

(2) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where State or local authorities decline to enter into such arrangements, the owner or operator shall document the refusal in the operating record.

12. Purpose and implementation of contingency plan.

(a) Upon the effective date of this document, the owner or operator shall have a contingency plan for the facility. The contingency plan shall be subject to approval by the California State Department of Health Services and shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

(b) The provisions of the plan shall be carried out immediately wherever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

13. Content of contingency plan.

(a) The contingency plan shall describe the actions facility personnel shall take to comply with Items 12 and 17 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

(b) If the owner or operator has already prepared some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the conditions of this document.

(c) The plan shall describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to Item 13.

(d) The plan shall list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see Item 18), and this list shall be kept up to date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.

(e) The plan shall include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list shall be kept up to date. In addition, the plan shall include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(f) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signal(s) to be used to begin evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous wastes or fires).

14. Copies of contingency plan.

A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility; and

(b) Submitted to the California State Department of Health Services and to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

15. Amendment of contingency plan.

The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

(a) Applicable regulations are revised;

(b) The plan fails in an emergency;

(c) The list of emergency coordinators changes; or

(d) The list of emergency equipment changes.

16. Emergency coordinator.

At all times, there shall be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

17. Emergency procedures.

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) shall:

(1) Immediately activate internal facility alarms or communication systems, where applicable, to notify all facility personnel;

(2) Immediately notify appropriate State or local agencies with designated response roles if their help is needed; and

(3) Notify the California State Department of Health Services by telephone or telegraph within 24 hours of occurrence.

(b) Whenever there is a release, fire, or explosion, the emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any released materials. This may be done by observation or review of facility records or manifests and, if necessary, by chemical analysis.

(c) Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, the findings shall be reported as follows:

(1) The emergency coordinator shall immediately notify either the government official designated as the on-scene coordinator for that geographical area (in the applicable regional contingency plan under Part 1510, Title 40, Code of Federal Regulations), or the National Response Center (using their 24-hour toll free number: 800/424-8802). The report shall include:

(i) Name and telephone number of reporter;

(ii) Name and address of facility;

(iii) Time and type of incident (e.g., release, fire);

(iv) Name and quantity of material(s) involved, to the extent known;

(v) The extent of injuries, if any; and

(vi) The possible hazards to human health, or the environment, outside the facility.

(2) If his assessment indicates that evacuation of local areas may be advisable, appropriate local authorities shall be notified immediately. The emergency coordinator shall be available to help appropriate officials decide whether local areas should be evacuated.

(e) During an emergency the emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous

waste at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion or release, the emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(h) The emergency coordinator shall ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The owner or operator shall notify the California State Department of Health Services and local authorities, that the facility is in compliance with Item 17 (h) before operations are resumed in the affected area(s) of the facility.

(j) The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 30 days after the incident, he shall submit a written report on the incident to the California State Department of Health Services. The report shall include:

(1) Name, address, and telephone number of the owner or operator;

(2) Name, address, and telephone number of the facility;

(3) Date, time, and type of incident (e.g., fire, explosion);

(4) Name and quantity of material(s) involved;

(5) The extent of injuries, if any;

(6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(7) Estimated quantity and disposition of recovered material that resulted from the incident.

IV. RECORDKEEPING

1. Operating record.

(a) The owner or operator shall keep a written operating record at the facility.

(b) The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(1) A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility;

(2) The location of each hazardous waste within the facility and the quantity at each location. This information shall include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

(3) Records and results of waste analyses and trial tests performed;

(4) Summary reports and details of all incidents that require implementing the contingency plan;

(5) Records and results of inspections (except these data need be kept only three years);

(6) Monitoring, testing or analytical data where required; and

(7) All closure cost estimates.

2. Availability, retention, and disposition of records.

(a) All records including plans, required in this document shall be furnished upon request, and made available at all reasonable times for inspection, by any officer, employee, or respresentative of the California State Department of Health Services who is duly designated by the Director;

(b) The retention period for all records required in this document is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the California State Department of Health Services;

(c) A copy of records of waste disposal locations and quantities in Item 1 (b)(2) shall be submitted to the California State Department of Health Services and local land authority upon closure of the facility.

3. Annual report.

The owner or operator shall prepare and submit a single copy of an annual report to the California State Department of Health Services by March 1 of each year beginning March 1, 1982. The annual report shall cover facility activities during the previous calendar year and shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) A description and the quantity of each hazardous waste the facility received during the year;

(d) The method of treatment, storage, or disposal for each hazardous waste;

(e) Monitoring data where required;

(f) The most recent closure cost estimate;

(g) The certification signed by the owner or operator of the facility or his authorized representative.

4. Additional reports.

In addition to submitting the annual report required in Item 3, the owner or operator shall also report to the California State Department of Health Services:

(a) Releases, fires, and explosions;

(b) Ground-water contamination and monitoring data;

(c) Facility closure.

V. CLOSURE

1. Closure.

The owner or operator shall close his facility in a manner that: (a) minimizes the need for further maintenance, and (b) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water, or surface waters, or to the atmosphere.

2. Closure plan and amendment of plan.

(a) The owner or operator shall have a written closure plan. This plan shall be subject to approval by the California Regional Water Quality Control Board and shall be kept at the facility. This plan shall identify the steps necessary to close the facility completely at any point during its intended life and at the end of its intended life. The closure plan shall include, at least:

(1) A description of how and when the facility will be partially closed, if applicable, and ultimately closed. The description shall identify the maximum extent of the operation which will be unclosed during the life of the facility, and how Item 1 and other applicable conditions of this document will be met;

(2) An estimate of the maximum inventory of wastes in storage or in treatment at any given time during the life of the facility;

(3) A description of the steps needed to decontaminate facility equipment during closure; and

(4) A schedule for final closure which shall include, as a minimum, the anticipated date when wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which will allow tracking of the progress of closure. (For example, the expected date for completing treatment or disposal of waste inventory shall be included, as must the planned date for removing any residual wastes from storage facilities and treatment processes.)

(b) The owner or operator may amend his closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) The owner or operator shall amend his plan any time changes in operating plans or facility design affect the closure plan.

(c) The owner or operator shall submit his closure plan to the California Regional Water Quality Control Board at least 180 days before the date he expects to begin closure. The California Regional Water Quality Control Board will modify, approve, or disapprove the plan within 90 days of receipt and after providing the owner or operator and the affected public (through a newspaper notice) the opportunity to submit written comments.

3. Time allowed for closure.

(a) Within 90 days after receiving the final volume of hazardous wastes, the owner or operator shall treat all hazardous wastes in storage or in treatment, or remove them from the site, or dispose of them on-site, in accordance with the approved closure plan.

(b) The owner or operator shall complete closure activities in accordance with the approved closure plan and within six months after receiving the final volume of wastes. The California Regional Water Quality Control Board may approve a longer closure period under Item 2 (c) if the owner or operator can demonstrate that: (1) the required or planned closure activities will, of necessity, take him longer than six months to complete, and (2) that he has taken all steps to eliminate any significant threat to human health and the environment from the unclosed but inactive facility.

4. Disposal or decontamination of equipment.

When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.

5. Certification of closure.

When closure is completed, the owner or operator shall submit to the California Regional Water Quality Control Board certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

VI. FINANCIAL RESPONSIBILITY

1. Cost estimate for facility closure.

   (a) The owner or operator shall have a written estimate of the cost of closing the facility in accordance with the applicable closure requirements of this document. The owner or operator shall keep this estimate, and all subsequent estimates, at the facility. The estimate shall equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan.

   (b) The owner or operator shall prepare a new closure cost estimate whenever a change in the closure plan affects the cost of closure.

   (c) On each anniversary of the effective date of this document, the owner or operator shall adjust the latest closure cost estimate using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its *Survey of Current Business*. The inflation factor shall be calculated by dividing the latest published annual Deflator by the Deflator for the previous year. The result is the inflation factor. The adjusted closure cost estimate shall equal the latest closure cost estimate (see Item 1(b)) times the inflation factor.

VII. TANKS

1. Operation.

   (a) Treatment or storage of hazardous waste in tanks shall comply with Item 7 (b), Part III of this document.

   (b) Hazardous waste or treatment reagents shall not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

   (c) Uncovered tanks shall be operated to ensure at least 60 centimeters (2 feet) of freeboard, or the tank shall be equipped with a containment structure (e.g., dike or trench), a drainage control system, or a diversion structure (e.g., standby tank) with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank.

   (d) If hazardous waste is continuously fed into a tank, the tank shall be equipped with a means to stop this inflow (e.g., a waste feed-cutoff system or by-pass system to a stand-by tank).

2. Analysis of waste and trial tests.

   (a) If a tank is to be used for:

      (1) Chemically treating or storing a hazardous waste which is substantially different from waste previously treated or stored in that tank; or

      (2) Chemically treating hazardous waste with a substantially different process than any previously used in that tank; the owner or operator shall before treating or storing the different waste or using the different process:

         (i) Conduct waste analyses and trial treatment or storage tests (e.g., bench scale or pilot plant scale tests) to document that this proposed treatment or storage will comply with Items 1(a) and (b); or

         (ii) Obtain written information on similar storage or treatment of similar waste under similar operating conditions to document that this proposed treatment or storage will comply with Items 1 (a) and (b).

3. Inspections.

(a) The owner or operator of a tank must inspect, if applicable:

(1) Discharge control equipment (e.g., waste feed cut-off systems, and drainage systems), at least once each operating day, to ensure that it is in good working order;

(2) Data gathered from monitoring equipment (e.g., pressure and temperature gauges), at least once each operating day, to ensure that the tank is being operated according to its design;

(3) The level of waste in the tank, at least once each operating day, to ensure compliance with Item 1 (c);

(4) The construction materials of the tank, at least weekly, to detect corrosion or leaking of fixtures or seams; and

(5) The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

4. Closure.

At closure, all hazardous waste and hazardous waste residues shall be removed from tanks, discharge control equipment, and discharge confinement structures.

5. Ignitable or reactive waste.

(a) Ignitable or reactive waste shall not be placed in a tank, unless:

(1) The waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste, mixture, or dissolution of material is no longer ignitable or reactive and Item 7 (b), Part III of this document is complied with; or

(2) The waste is stored or treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

(3) The tank is used solely for emergencies.

(b) If the owner or operator treats or stores ignitable or reactive waste in covered tanks, he shall comply with the National Fire Protection Association's (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code--1977".

6. Incompatible Wastes.

(a) Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same tank, unless Item 7 (b), Part III of this document is complied with.

(b) Hazardous waste shall not be placed in an unwashed tank which previously held an incompatible waste or material.

VIII. STORAGE OF CONTAINERS

1. Condition.

   If a container holding hazardous waste is not in good condition, or if it begins to leak, the owner or operator shall transfer the hazardous waste from this container to a container that is in good condition, or manage the waste in some other way that complies with the conditions of this document.

2. Compatibility of waste.

   The owner or operator shall use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

3. Management.

   (a) A container holding hazardous waste shall remain closed during storage, except when it is necessary to add or remove waste.

   (b) A container holding hazardous waste shall not be opened, handled, or stored in a manner which might rupture the container or cause it to leak.

4. Inspections.

   The owner or operator shall inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.

5. Ignitable or reactive waste.

   Containers holding ignitable or reactive waste shall be situated at least 15 meters (50 feet) from the property line of the facility.

6. Incompatible wastes.

   (a) Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same container, unless the requirements of Item 7 (b), Part III of this document are met.

   (b) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material unless the requirements of Item 7 (b), Part III of this document are met.

(c) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814
(916) 323-6042

TORRANCE

January 15, 1982

TO: All Facility Operators

FROM: Hazardous Materials Management Section

Enclosed is the Interim Status Document issued by the California State Department of Health Services for your facility pursuant to Section 25200.5, Health and Safety Code. The Interim Status Document authorizes the continued operation of your facility under interim status conditions pending final review and decision of the Department on the issuance of a Hazardous Waste Facility Permit.

The Department has based the conditions set forth in the document on information obtained from the U.S. Environmental Protection Agency (EPA) regarding your facility and on additional information obtained from you or your representative during a recent telephone interview. Among the conditions which appear in the document are requirements similar to those presently imposed by EPA in Part 265, Title 40, Code of Federal Regulations.

Please note the following with regard to the Interim Status Document:

1. Within six months after receiving specific written notice from the Department to do so, you must submit an operation plan to the Department (see Item 3, "General Conditions" part). Our instructions for preparing the plan will accompany our written notice.

2. Your facility will be subject to inspection by the Department to ensure compliance with the conditions imposed in the Interim Status Document (see Item 1(b), "General Conditions" part). Compliance with those conditions is required to sustain the validity of the Document.

Please be advised that the purpose for issuance of the Interim Status Document is to allow you to continue to operate your facility until a final Hazardous Waste Facility Permit is issued. The Interim Status Document should not and cannot be construed to be a confirmation by the Department that the facility is constructed and operated in accordance with all applicable California statutes and regulations at this time. If you have questions concerning the Interim Status Document, please write or call Eric B. Workman at the letterhead address or telephone number.

Sincerely,

Peter A. Rogers, Chief

Enclosure

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814

Facility:	Hughes Aircraft Company 3100 West Lomita Blvd. Los Angeles County Torrance, CA 90509	INTERIM STATUS DOCUMENT Number: CAD041666819 Effective Date: December 16, 1981
Operator:	Hughes Aircraft Company 3100 West Lomita Blvd. Torrance, CA 90509	

Pursuant to Section 25200.5 of the California Health and Safety Code, this Interim Status Document is hereby granted to Hughes Aircraft Company subject to the conditions set forth in Attachment A which by this reference is incorporated herein.

Peter A. Rogers, Acting Chief
Hazardous Waste Management Branch

10/25/82 PHC

(1) 2 underground 1500 gallon, 1000 gallon — 6" opening.
tanks - solvents — unrecyclable → BMK Disposal

(2) E.H. WASTE - BERRILLIUM & ARSENIC - dry waste in drums
FENCED AREA — CONCRETE PAD BERRYLLIUM OXIDE
approx 15 X 30 feet.
Located within fenced area

(3) 6-9 months change of area.

(4) no smoking ~~[illegible]~~ no entrance signs

solvent tank PM 23-003
6 in piped in to tank.

(5) empty drums — SARIN BLAKELY & DOW CHEMICALS

(6) Solvent tank PM 23-002 no change in expansion.
1000 gallon - prob. steel

(7) Clarifier unit for facility.
S.C. INCORP. (SOLVENTS)
INDUSTRIAL WASTE UTILIZATION (CYANIDE)

(8) CONTINGENCY PLAN & CLOSURE PLAN

(9) INDUSTRIAL DEFENSE MANUAL

(10) [illegible]

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF HEALTH SERVICES
107 SOUTH BROADWAY, ROOM 7128
LOS ANGELES, CA 90012
(213) 620-2380

December 2, 1982

Mr. P.F. Mahlow, Jr.
Hughes Aircraft Company
Electron Dynamics
3100 W. Lomita Blvd.
Torrance, CA 90509

Dear Mr. Mahlow:

INTERIM STATUS INSPECTION

On October 25, 1982, an inspection was conducted by David Wong of this Department's staff at the Hughes Aircraft Company facility, 3100 W. Lomita Blvd., Torrance, CA; I.D. # CAD041666819. The inspection was made to verify compliance with conditions outlined in the Interim Status Document issued to your facility on December 16, 1981.

The inspection disclosed that the following corrective actions must be undertaken to bring your facility into full compliance with the Interim standards:

1. All hazardous wastes are to be stored in an area protected by a containment structure which is impervious to the waste stored or to be stored, and designed so that any surface water runoff or spills can be contained. (e.g.,pad and berms).

2. Approval from this Department is to be obtained prior to any relocation of the hazardous waste storage area(s).

As advised during the inspection, your facility may qualify for an exemption or variance from State Hazardous Waste Facility Permit regulations. Enclosed is an application and the applicable guidelines for your consideration.

It is requested that you provide to this office by January 1, 1983 a plan for correction of the above listed deficiencies and if applicable for your facility, a completed permit variance/exemption application form.

Please feel free to contact Mr. David Wong of my staff should you have any

Sincerely,

John A. Hinton, P.E.
Regional Administrator
Southern Region
Permits, Surveillance and
Enforcement Section
Hazardous Waste Management Program

questions. He can be reached at the letterhead telephone number.

Sincerely,

John A. Hinton, P.E.
Regional Administrator
Southern Region
Permits, Surveillance and
Enforcement Section
Hazardous Waste Management Branch

Enclosures

cc: Thomas C. Jones, Acting Chief
Permits, Surveillance and
Enforcement Section
Hazardous Waste Management Branch
714 P. Street, Room 550
Sacramento, CA 95814

bcc: Tickler File
DW/JAH/mr

HUGHES
HUGHES AIRCRAFT COMPANY
ELECTRON DYNAMICS DIVISION

22 December 1982

DEC 27 1982
Calif...
of H...
LOS ANG...

Department of Health Services
107 South Broadway, Rm 7128
Los Angeles, CA 90012

Atten: D. Wong

A. The plan for correction of the noted items in order to come into compliance with the Interim standards is as follows.

The existing hazardous waste will be disposed of through a certified hauler by 12/23/82 or will be placed in the existing bermed solvent storage area.

The project to relocate this storage is projected for completion in mid April 1983. Upon completion the materials will be moved.

B. As the plans are available for the new hazardous waste storage area, they will be provided for your review to insure compliance with governing regulations.

Sincerely,

Paul F. Mahlow, Jr.
Environmental Health and Safety
Head

PFM/jt

3100 West Lomita Boulevard, Torrance, California 90509, Tel (213)534-2121, TWX 910 347 6239

CLOSURE PLAN FOR THE ELECTRON DYNAMICS DIVISION
HUGHES AIRCRAFT COMPANY

1. It is not anticipated that the Electron Dynamics Division of Hughes Aircraft Company and/or any general operations will require closure in the foreseeable future. To this end, a new building is scheduled for completion at this site in October 1985.

   The following closure estimate reflects the presently forecast cost for removing the maximum amount of hazardous waste materials that can be stored at this site currently, plus the removal of the underground waste solvent tanks.

2. Estimated cost of disposal of all waste stored:

   A. Capacity - Bldg 230 = 1 -1500 gal. underground tank.
   Bldg 231 = 1 - 1000 gal. underground tank.
   Bldg 240 = 1 - 225 gal. water soluble oil sump
   Bldg 230 = 40 - 50 barrels

   A.1 Present Disposal Charge
   Bldg 230 & 231 - $695.00
   Bldg 240 - $465.00
   Bldg. 230 extremely hazardous waste (barrels) $595.00.

   A.2 Inflation adjustment (15%) - $265.00

   A.3 Underground tank removal
   Bldg 230 & 231 (estimate from Facility Engineering) $7,000.00

   Total Estimate $9,020.00

3. Written cost estimates for facility closure as outlined will be maintained on file and updated as required annually. Should hazardous waste storage be affected by facility product line or general operation closure in the future, the closure plan at that time will adhere to current state health and safety regulations.

Requirement for surety of this expense has been submitted to Corporate financial planning through Corporate Environmental Health and Safety.

CLOSURE PLAN

Facilities used for the short term storage of hazardous waste at Hughes Aircraft Co., Torrance must be relocated due to a construction project on the existing property. The storage facilities will not be removed from the property depicted on maps but merely relocated within the property boundaries.

The facilities involved in the relocation are a waste solvent tanks and a fenced area for the storage of extremely hazardous waste in drums.

Maintenance of the facility will not be stopped as the Company is not leaving the property.

Time Frame

a. The solvent waste tanks will be emptied (1500 gal vol) (500 gal vol) of waste and moved by a certified hauler to an approved treatment disposal facility.

1 day –

The tanks will be decontaminated and certified as such. The tanks will be inspected to insure no leaks or deterioration of the tanks. The tanks will then be disposed of.

2 days –

Contingency: detection of tank leakage will result in disposal of contaminated materials under Hazardous Waste Regulation.

1 day –

b. The concrete pad used for hazardous waste will be sampled (wipe samples) for surface contamination (arsenic contaminated waste, and beryllium oxide contaminated waste). The materials are unreactive and surface analysis will be specific.

Contingency: detection of surface contamination will result in concrete being disposed of as contaminated waste.

May 1, 1991 HAC Comments About Attachment "R".

We have been unable to find any information about, or any analytical results for, the "wipe samples" referenced in lettered paragraph "b". "Wipe samples" are mentioned in one document included in Attachment "Y", the February 12, 1986 document from Timothy Berry to "To Whom It May Concern". As explained in HAC comments made about that document and attached to it, that reference has not been helpful either in our efforts to find any information about these "wipe samples".

INTERIM PLAN -

SHUT DOWN USAGE OF B 230 SOLVENT TANK

Project action -

SHUT DOWN DRAINS -

ADMIN : NOTICE

PROCEDURE - COLLECT IN CANS

PHYSICAL - CANS/LABELS

LINE & DRUM: SCHEDULE, SOLVENT FLOW

TODAY @ 2:00

ABOUT 1 HOUR

INTERIM COLLECTION OF SOLVENTS AT DRAINS

- M & P : 2732 ✓ WASTE CAN - INTERIM
  2738 ✓ " " "
- METALLURGICAL LAB: 2702 ✓ " " "
- PLATING SHOP : 2524 DRUM AT LINE (EXTERNAL)

WASTE DRUM COLLECTION

ABSORBANT

✓ ZONE CONTROL: FENCE

✓ VALVE ON LINE

✓ VENT ON LINE

✓ GROUND STRAP

✓ SIGN: NO SMOKING

✓ drip pan

PROCEDURE: CHECK / ~~DR~~ SHIFT

: XSFR DRUM

WASTE DRUM STORAGE -

VALLEE

SPACE ?

NUMBER OF CONTAINERS

CONTAINERS - DESIGNATE, PAINT

TIME OF INTERIM ACTION

HOW SOON TO TIE IN NEW TANK -

TANK REMOVAL

35 YARDS OF SPOIL (DIRT) IF DIGS OUT
POTENTIAL PROBLEM: D I WATER PAD & TANK
4-5 DUMPSTERS (NOT INCLUDED) FOR

$2650 TO DIG UP AND REMOVE TANK LEAVIN
PILE OR IN DUMPSTER (PROVIDED BY HAC)

$1600 - SPREADER & SHORING IN EXCAVATION
1 MONTH ADD FOR EACH ADDITIONAL MONTH
$150 / MON ~~ANYTHING OVER M~~, PRORATED

nothing in bid to cover possible repair of fence around D. I. water yard

NO ENGR PERMITS
NO SAW CUTTING

NOTICE - 1 WORKING DAY IS GREAT

T

MEMORANDUM

7/8/83 WKL

TO: FILE

FROM: DAVID WONG

RE: HUGHES AIRCRAFT COMPANY SUBSURFACE TANK LEAKAGE REPORT

NESTOR O. ACEDERA
JUL 7 1983

TELEPHONE ON JULY 5, 1983 8:30 A.M. BETWEEN PAUL MAHLOW AND DAVID WONG CONCERNING A SUBSURFACE HAZARDOUS WASTE STORAGE TANK EXCAVATED AND FOUND TO HAVE A LEAK. PRELIMINARY INDICATIONS ARE THAT THE TANK WAS DAMAGED DURING REMOVAL OPERATIONS. A SOILS TESTING PROGRAM WAS INITIATED BY HARGIS & MONTGOMERY CO.
TUCSON, ARIZONA (602) 881-4912
TO DETERMINE CONTAMINATION OF SOILS AROUND THE TANK. THE REPORT HAS NOT BEEN COMPLETED. HUGHES REPORTED THE INCIDENT AS PRECAUTIONARY.

MR MAHLOW WAS ADVISED TO CONTACT THIS OFFICE AS SOON AS THE RESULTS OF THE TESTING IS COMPLETED AND TO SUBMIT A COPY.

JOSH WORKMAN RWQCB-LA REGION WAS ADVISED OF SITUAT.

U

SECTION ~~XIII~~ X.10

Closure and Post Closure

A Closure Plan

Note: Closure is not expected in the next five years.

1. How the facility will be ultimately closed:

Waste solvent tank and containment vault for Waste Flammable Solvents from various manufacturing processes at the site. See insert #5 for location.

Barrel storage yard for containerized waste generated from production lines. See insert #5 for location.

Waste treatment system - tanks, hardware, foundation and any related materials/structures. System is used to treat and neutralize acids, caustics, cyanides. Heavy metals are precipitated and collected as filter cake. See insert #5 for location.

Closure Step:

The manager of facilities or his designee, Hughes Aircraft Co, Electron Dynamics and Microwave Products Divisions will contact IT Corporation of 336 W. Anaheim, Wilmington CA. (or another qualified person) to remove all liquid from the areas listed above.

Instruct IT Corporation to clean and remove all liquid and solid wastes remaining in the various tanks in the waste treatment yard.

Instruct IT Corporation to rinse and cleanse above tanks

Instruct IT Corporation to remove and cleanse waste solvent tank.

Instruct IT Corporation to transport all liquids and solids acquired in the above action items to a class 1 waste facility.

Final closure will consist of the removal or decontamination (if necessary) of

A. Concrete Vault
B. Concrete as barrel yard foundation
C. Concrete, tanks and related hardware in waste treatment area
D. Solvent Tank

2. The facility should be fully operational or fully closed. No partial operation is anticipated.

3. How need for Maintenance after closure will be minimized.

   After facility has been closed, no maintenance will be required due to final closure steps as identified in Section 1.

4. How escape of the following to ground water, surface water, or the atmosphere after closure will be controlled, minimized, or eliminated to protect public health and the environment:

   Hazardous Waste: Controlled by closure steps outlined above.
   Hazardous Waste constituents: (same as above).
   Leachate: N/A, since underground tanks will be removed or decontaminated.
   Contaminated Rainfall: (same as above).

5. Estimate of the maximum inventory of wastes in storage at any given time during the life of the facility:

Maximum capacity of the Waste Solvent tank - 2000 gallons.
Maximum capacity of the Barrel storage yard - 2,800 gallons.
Maximum capacity of the waste treatment area - 4000 ibs (filter cake).

6. The steps required to decontaminate facility equipment during closure:
   IT Corporation will be instructed to decontaminate any facility equipment which was used in the closure activities and which thereby became contaminated with hazardous wastes.

7. Schedule for Final Closure: N/A (closure is not expected in the next five years.)

8. The most recent closure cost estimate:

   Factors affecting these current estimates include: the rate of inflation, local labor agreements, and frequent changes in disposal costs. In addition, proposed alterations in state laws governing the disposal of certain hazardous wastes may change the present method and cost for disposal.

   Closure Situation

8a Removal of waste treatment filter cake - current estimate $7,000 for 4000 lbs.

8b Removal and decontamination of 2000 gallon waste solvent tank - current estimate of $3,500 .

8c Remove 400 pounds of extremely hazardous waste and 800 pounds of flammable solid waste - current estimate $2600.00

8d Removal and disposal of concrete vault (assuming no contamination) 20 tons - $24,000 current estimate.

8e Removal and disposal of concrete foundation in barrel yard (assuming no contamination) 15 tons - $18,000 current estimate.

8f Removal, decontamination and disposal of tanks and hardware in waste treatment area - 62,000 lbs - current estimate $74,400

8g Removal and disposal (assuming no contamination) of 19 tons of concrete as the foundation in the treatment area current estimate - $22,800

Total estimate for potential closure
$152,300

B. Procedures to ensure that the Closure Plan is amended whenever changes in facility design or operation occur:

a. Agreement has been made between Torrance Site's Facility Department and the Safety, Health and Environment Affairs Department for disclosure of all facility design and change of operation proposals in regards to the hazardous wastes storage areas.

b. Upon receipt of such proposals, Safety, Health and Environment Affairs will examine the proposals and amend Closure Plan to reflect changes.

C. Procedure to ensure that the DHS will be notified at least 180 days prior to the expected date of closure:

The facilities or his designee will notify the DOHS and the Safety, Health and Environment Affairs office at least 6 - 9 months prior to the expected date of closure.

D. Procedures to ensure that, at closure, all hazardous wastes are removed from the following facilities and all appurtenant structures and equipment are decontaminated or removed:

Container Storage Areas: (See Section I)
Tanks: (Same as Above)

HUGHES AIRCRAFT COMPANY

Hazardous Materials Management
APR 29 1983
California Department of Health Services
LOS ANGELES

April 29, 1983

State of California
Health and Welfare Agency
Dept. of Health Services
107 South Broadway, Room 7128
Los Angeles, CA 90012

Attn: Mr. John A. Hinton, P. E.

Dear Mr. Hinton:

Hughes Aircraft Company is one of the leading defense contractors in the nation and its facilities are continually working on many important and sensitive defense contracts. In addition, many of its products and manufacturing processes represent the state of the art within the industry. Accordingly, the attached Hazardous Waste Operation Plan for Hughes Aircraft Company Electron Dynamics Division contains information which could be misused for industrial espionage or sabotage purposes or to compromise national defense and security interests. Therefore, we believe that categorical disclosure of the information contained in the Plan would be inappropriate under the Public Records Act. In lieu of asserting at this time a specific claim that this information is a trade secret or is otherwise classified or confidential, we request that you advise us prior to releasing any information in response to any disclosure request so that we can discuss with you the following: First, whether or not your Department should exercise its discretion pursuant to California Government Code Section 6225 to conclude that in any particular case, the public interest against disclosure outweighs the public interest in disclosure, and that disclosure, therefore, would not be appropriate under the circumstances absent a compelling showing of need. Second, should the Department in any particular case conclude that disclosure of any information in this Plan was appropriate, that Hughes Aircraft Company be given a prior opportunity to seek appropriate relief, either administrative or judicial, if necessary. If this procedure is not satisfactory to the Department, please advise us as soon as possible so that we can take whatever action is necessary to protect this information.

Sincerely,

HUGHES AIRCRAFT COMPANY

P. K. O'Brien
Assistant Corporate Manager
Environmental Health and Safety
Corporate Human Resources

PKO/bsw

Received with Operation Plan
same receiving date.

CLOSURE PLAN FOR THE ELECTRON DYNAMICS DIVISION &
MICROWAVE PRODUCTS DIVISION
HUGHES AIRCRAFT COMPANY

1. It is not anticipated that the Electron Dynamics and Microwave Products Divisions of Hughes Aircraft Company and/or any general operations will require closure in the foreseeable future.

   The following closure estimate reflects the presently forecast cost for removing the maximum amount of hazardous waste materials that can be stored at this site currently.

2. Estimated cost of disposal of all waste stored:

   A. Capacity -

      Yard Storage = 40 - 50 barrels
      Bldg. 232 = 1 ground level 2,000 gal. capacity waste solvent tank

   A.1 Present Disposal Charge -

      Solvent Tank $800.00

      Extremely hazardous Waste Barrels -

      6 barrels @ $300.00 each

   A.2 Inflation adjustment (15%) - $265.00

      Total Estimate $2,865.00

3. Written cost estimates for facility closure as outlined will be maintained on file and updated as required annually. Should hazardous waste storage be affected by facility product line or general operation closure in the future, the closure plan at that time will adhere to current state health and safety regulations.

   Requirement for surety of this expense has been submitted to Corporate financial planning through Corporate Environmental Health and Safety.

W

HUGHES
AIRCRAFT COMPANY
ELECTRON DYNAMICS DIVISION
Industrial Electronics Group

21 November 1985

To Whom It May Concern:

The enclosed material represents the most updated copy of the Hazardous Waste Operation Plan from the Electron Dynamics Division and Microwave Products Division of Hughes Aircraft Company in Torrance, California.

According to our Corporate Office the copy which was delivered to you in 1983 was misplaced.

Should the information contained in this binder be lacking criteria in any way, please contact my office.

Sincerely,

Timothy J. Barry
Environmental Health & Safety Engineer

6862

TJB/jt

One Large Binder containing OP received NOV 26, 1985

3100 West Lomita Boulevard, P.O. Box 2999, Torrance, CA 90509-2999
(213) 517-6000

which identifies the source, identify, composition and volume of the material.

(3) Manifests properly filled out and on file.

(4) Manifests properly filled out and on file.

(5) Maximum quantities, and locations identified in Section V, item A.

(6) Insert 18

(7) Facility form EDD 15171 Accident Incident Investigation will be used to document incidents.

(8) Facility form EDD 16675 "Safety Inspection Report."

(9) N/A

2. N/A

3. Any incident which could result in a hazard to public health and safety, domestic, livestock, or wildlife, or result in a discharge of hazardous waste outside of an area designated in this plan will be reported to the DHS within 24 hrs.

4. N/A

5. Insert 25

B. 1. & 2. This facility abides by state and company regulations pertaining to hazardous materials. Any record required for such is available for inspection by DHS and is retained for the required amount of time.

XIII. CLOSURE PLAN FOR THE ELECTRON DYNAMICS DIVISION AND MICROWAVE PRODUCTS DIVISION - HUGHES AIRCRAFT COMPANY

1. It is not anticipated that the Electron Dynamics and Microwave Products Divisions of Hughes Aircraft Company and/or any general operations will require closure in the foreseeable future.

The following closure estimate reflects the presently forecast cost for removing the maximum amount of hazardous waste materials that can be stored at this site cleaning the treatment/storage areas and potentially taking soil core samples.

2. Estimated cost of disposal of all waste stored:

A. Capacity -

Yard storage = 40-50 barrels
Bldg. 232 = 1 ground level 2,000 gal. capacity waste solvent tank

A.1 Present Disposal Charge -

Solvent Tank $800.00

Extremely hazardous waste barrels -

6 barrels @ $300.00 each

A.2 Decontamination of structures and equipment - $1500

Disposal of residue from decontamination - $500

Administrative support cost $1000

Core samples (if needed) $2,000

20% inflation - $1520.00

Total closure cost estimate approx $9000

3. Should this facility ever be closed the waste storage areas will be thoroughly cleaned and core samples taken if needed. When closure is complete this facility will submit a certification made out by a independent engineer, registered in California verifying that the facility has been closed according to specifications. The cost estimates on this closure plan represents costs figures received from Mark Farwell, Operations Foreman, IT Corporation.

XIV FINANCIAL RESPONSIBILITY

See insert 24

X

MJ.

Hazardous Materials Management
JUN 02 1986
California Department of Health Services
LOS ANGELES

HUGHES
AIRCRAFT COMPANY
ELECTRON DYNAMICS DIVISION
Industrial Electronics Group

5-30-86

Dear Michel:

Enclosed is the revised operation plan per your instructions. Please review the enclosed plan and insert the added photos, closure plan etc. to your copy. Please let us know as soon as possible if this material is satisfactory. Thanks for your assistance.

Sincerely,

Timothy J Barry
Health/Safety Engineer

3100 West Lomita Boulevard, P.O. Box 2999, Torrance, CA 90509-2999
(213) 517-6000

Instruct IT Corporation to remove and cleanse waste solvent tank.

Instruct IT Corporation to transport all liquids and solids acquired in the above action items to a class 1 waste facility.

Final closure will consist of the removal or decontamination (if necessary) of

A. Concrete Vault
B. Concrete as barrel yard foundation
C. Concrete, tanks and related hardware in waste treatment area
D. Solvent Tank

2. The facility should be fully operational or fully closed. No partial operation is anticipated.

3. How need for Maintenance after closure will be minimized.

   After facility has been closed, no maintenance will be required due to final closure steps as identified in Section 1.

4. How escape of the following to ground water, surface water, or the atmosphere after closure will be controlled, minimized, or eliminated to protect public health and the environment:

   Hazardous Waste: Controlled by closure steps outlined above.
   Hazardous Waste constituents: (same as above).
   Leachate: N/A, since underground tanks will be removed or decontaminated.
   Contaminated Rainfall: (same as above).

5. Estimate of the maximum inventory of wastes in storage at any given time during the life of the facility:

Maximum capacity of the Waste Solvent tank - 2000 gallons.
Maximum capacity of the Barrel storage yard - 2,800 gallons.
Maximum capacity of the waste treatment area - 4000 ibs (filter cake).

6. The steps required to decontaminate facility equipment during closure:
   IT Corporation will be instructed to decontaminate any facility equipment which was used in the closure activities and which thereby became contaminated with hazardous wastes.

7. Schedule for Final Closure: N/A (closure is not expected in the next five years.)

8. The most recent closure cost estimate:

   Factors affecting these current estimates include: the rate of inflation, local labor agreements, and frequent changes in disposal costs. In addition, proposed alterations in state laws governing the disposal of certain hazardous wastes may change the present method and cost for disposal.

   Closure Situation

8a Removal of waste treatment filter cake - current estimate $7,000 for 4000 lbs.

8b Removal and decontamination of 2000 gallon waste solvent tank - current estimate of $3,500 .

8c Remove 400 pounds of extremely hazardous waste and 800 pounds of flammable solid waste - current estimate $2600.00

8d Removal and disposal of concrete vault (assuming no contamination) 20 tons - $24,000 current estimate.

8e Removal and disposal of concrete foundation in barrel yard (assuming no contamination) 15 tons - $18,000 current estimate.

8f Removal, decontamination and disposal of tanks and hardware in waste treatment area - 62,000 lbs - current estimate $74,400

8g Removal and disposal (assuming no contamination) of 19 tons of concrete as the foundation in the treatment area current estimate - $22,800

Total estimate for potential closure
$152,300

B. Procedures to ensure that the Closure Plan is amended whenever changes in facility design or operation occur:

ä. Agreement has been made between Torrance Site's facility Department and the Environmental Health and Safety department for disclosure of all facility design and change of operation proposals in regards to the hazardous wastes storage areas.

b. Upon receipt of such proposals, Environmental Health and Safety will examine the proposals and amend Closure Plan to reflect changes.

C. Procedure to ensure that the DHS will be notified at least 180 days prior to the expected date of closure:

The facilities or his designee will notify the DOHS and the Environmental Health and Safety office at least 6 - 9 months prior to the expected date of closure.

D. Procedures to ensure that, at closure, all hazardous wastes are removed from the following facilities and all appurtenant structures and equipment are decontaminated or removed:

Container Storage Areas: (See Section I)
Tanks: (Same as Above)

4. DNA

5. The Annual Report is submitted to DOHS by March 1, of each year and is on file in the Safety Office.

B. Records:

1 & 2. This facility abides by state and company regulations pertaining to hazardous materials. Any record required for such is available for inspection by DOHS and is retained for the required amount of time.

XIII. CLOSURE

A. Closure Plan: See insert #22 (last subject in contingency plan).

XIV. FINANCIAL RESPONSIBILITY

A. Closure:

Financial assurance mechanisms adopted for closure in accordance with Section 264.143, Title 40, Code of Federal Regulation - Asurety Bond - see Insert #24.

B. Liability Requirements: See Insert #24.

Place at end of insert 22

SECTION XIII

Closure and Post Closure

A Closure Plan

Note: Closure is not expected in the next five years.

1. How the facility will be ultimately closed:

Waste solvent tank and containment vault for Waste Flammable Solvents from various manufacturing processes at the site. See insert #5 for location.

Barrel storage yard for containerized waste generated from production lines. See insert #5 for location.

Waste treatment system - tanks, hardware, foundation and any related materials/structures. System is used to treat and neutralize acids, caustics, cyanides. Heavy metals are precipitated and collected as filter cake. See insert #5 for location.

Closure Step:

The manager of facilities or his designee, Hughes Aircraft Co, Electron Dynamics and Microwave Products Divisions will contact IT Corporation of 336 W. Anaheim, Wilmington CA. (or another qualified person) to remove all liquid from the areas listed above.

Instruct IT Corporation to clean and remove all liquid and solid wastes remaining in the various tanks in the waste treatment yard.

Instruct IT Corporation to rinse and cleanse above tanks

Y

The original Bond has been
Signed and forwarded to:
Ms. Jennifer Tachera
Permits Surveillance: Enforcement Section
Cal. State DHS
714 P Street Room 523
Sacramento, CA. 95814

Bond No. 5050747
Premium: $3,444.00
Per Annum

RCRA FINANCIAL GUARANTEE BOND
(40 CFR 264.151 (b))

17

DATE BOND EXECUTED: September 30, 1982

EFFECTIVE DATE: September 30, 1982

PRINCIPAL: Hughes Aircraft Company, Centinela Avenue and Teale, Culver City, California, a Delaware Corporation

TYPE OF ORGANIZATION: Corporation

SURETY: Hartford Accident and Indemnity Company, 3435 Wilshire Blvd. Los Angeles, California 90010

FACILITIES:

EPA I.D. NO.	FACILITY NAME AND ADDRESS	CLOSURE COST ESTIMATE
CAD 057 468 944	Newport Beach Facility 500 Superior Avenue Newport Beach, California	$ 5,000
CAD 041 162 124	Canoga Park Facility 8433 Fallbrook Avenue Canoga Park, California	2,000
CAD 000 633 230	Electro-Optical & Data Systems Group El Segundo South Facility 2000 East El Segundo Boulevard El Segundo, California	1,000
CAD 008 286 221	Culver City Site Centinela Avenue and Teale Culver City, California	1,000
CAT 080 010 853	Radar Systems Group El Segundo Plant Site 2000 East Imperial Highway El Segundo, California	9,247
CAD 060 897 063	Space & Communications Group 2060 East Imperial Highway El Segundo, California	76,000
CAD 003 109 243	Ground Systems Group 1901 West Malvern Avenue Fullerton, California	5,700

FACILITIES - Continued

EPA I.D. NO.	FACILITY NAME AND ADDRESS	CLOSURE COST ESTIMATE
CAD 096 882 147	Microelectronic Systems Division 2601 Campus Drive Irvine, California	$ 5,000
CAT 080 012 867	Support Systems Group 1500 Hughes Way Long Beach, California	10,000
CAD 076 071 737	Connecting Devices Division 17150 Von Karman Avenue Irvine, California	2,250
CAD 041 156 969	Research Laboratories 3011 Malibu Canyon Road Malibu, California	45,000
CAD 041 666 819	Electron Dynamics Division 3100 Lomita Boulevard Torrance, California	9,500
CAD 028 260 297	Santa Barbara Research Center Main Plant Site 75 Coromar Drive Goleta, California	500

TOTAL PENAL SUM OF BOND: One Hundred Seventy Two Thousand One Hundred Ninety Seven Dollars ($172,197.00)

SURETY BOND NUMBER: 5050747

KNOW ALL PERSONS BY THESE PRESENTS, That we, the Principal and Surety hereto are firmly bound to the U. S. Environmental Protection Agency (hereinafter called EPA) in the penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally with the Principal, for the payment of such sum only as is set forth heretofore. The limit of liability shall be the full amount of the penal sum.

WHEREAS said Principal is required, under the Resource Conservation and Recovery Act as amended (RCRA), to have a permit or interim status in order to own or operate each hazardous waste management facility identified above, and

WHEREAS said Principal is required to provide financial assurance for closure, or closure and post-closure care, as a condition of the permit(s) or interim status, and

WHEREAS said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

NOW, THEREFORE, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of final closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility,

Or, if the Principal shall fund the standby trust fund in such amount(s) within 15 days after an order to begin closure is issued by an EPA Regional Administrator or a U. S. district court or other court of competent jurisdiction,

Or, if the Principal shall provide alternate financial assurance, as specified in Subpart H of 40 CFR Parts 264 or 265, as applicable, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety, then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by an EPA Regional Administrator that the Principal has failed to perform as guaranteed by this bond, the Surety shall place funds in the amount guaranteed for the facility into the standby trust fund as directed by the EPA Regional Administrator.

The liability of the Surety shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety hereunder exceed the amount of said penal sum.

The Surety may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the EPA Regional Administrator(s) for the Region(s) in which the facilities are located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s) as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety, provided, however, that no such notice shall become effective until the Surety receives written authorization for termination of the bond by the EPA Regional Administrator(s) of the EPA Region(s) in which the bonded facilities are located.

IN WITNESS WHEREOF, the Principal and Surety have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the principal and Surety and that the wording of this surety bond is identical to the wording specified in 40 CFR 264.151(b) as such regulations were constituted on the date this bond was executed.

Principal: HUGHES AIRCRAFT COMPANY

Signature: _____

Name:

Title:

Corporate Seal:

Corporate Surety: HARTFORD ACCIDENT AND INDEMNITY COMPANY

Address: 3435 Wilshire Boulevard
Los Angeles, California 90010

State of Incorporation: Connecticut

Liability Limit: $172,197.00

Signature: _____

Name and Title: Evelyn M. Phillips, Attorney in Fact

Corporate Seal:

Bond Premium: $3,444.00

STATE OF CALIFORNIA }
COUNTY OF [illegible] } ss.

On this 30 day of September in the year one thousand nine hundred and eighty two, before me, [illegible], a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared Evelyn M. Phillips known to me to be the Attorney-in-Fact of the Hartford Accident and Indemnity Company, the Corporation described in and that executed the within instrument, and also known to me to be the person who executed it on behalf of the Corporation therein named, and he acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my Official Seal, at my office, in the said County, the day and year in this certificate first above written.

My Commission will Expire _____

Form [illegible] Printed in U.S.A. [illegible]

Notary Public in and for said County, State of California

HUGHES

INTERDEPARTMENTAL CORRESPONDENCE

TO: P. O'Brien CC:
ORG: 68-21

SUBJECT: Environmental Impairment Insurance Certificates of Insurance

DATE: April 11, 1983
REF.
FROM: W. F. O'Connor
ORG. 07-20

BLDG. C2 MAIL STA. A130
LOC. CT EXT. 414-7076

The following is a brief description of the attached Certificates of Insurance.

Hartford Accident & Indemnity Company

Policy Nos. 56 CLR P10611E and 56 JPR P10612E
Policy Limit: $1,000,000
Basically this coverage affords protection for the "sudden and accidental" discharge, dispersal or release of pollutants into the environment.

Great American Surplus Lines Insurance Company

Policy No. 2 CM 00846
Policy limits: $10,000,000 single loss/$20,000,000 total all losses during the policy period
This insurance is intended to close the gap left by the "sudden and accidental" coverage provided by the Hartford Insurance Company. The coverage is for gradual and unintentional pollution and would respond to (1) an impairment to the environment from pollutants that had been emitted over a period of time in accepted quantities; (2) synergistic impairment, i.e., the combination of supposedly tolerable emissions from another source; and (3) contingent impairment - possible substances that are thought to be "harmless" by today's standards and are found to be toxic in the future.

Allianz Underwriters, Inc.

Policy No. AUX5 200747
Policy Limits: $5,000,000 any one loss/$10,000,000 total for all losses during the policy period.
This limit is in excess of the Great American Suprlus Lines Insurance Company's limit. If there was a possibility that the limits of the Great American Suprlus Lines Insurance Company were to be exceeded due to a loss, this layer of insurance would respond. The coverage is the same and a $250,000 deductible applies to all of the above listed insurance limits.

Certificates of Insurance are a standard method of providing evidence of insurance coverage to concerned parties. Hughes Aircraft Company's policy is that the limits of any of our insurance policies are of a company matter and normally not made general knowledge. Governmental agencies or regulatory bodies that request our policy limits and by whom the insurance is written should be afforded this information.

SET TAB STOPS AT ARROWS

Certificate of Insurance

acord

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER
THIS CERTIFICATE DOES NOT AMEND EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW

NAME AND ADDRESS OF AGENCY
ARSH & McLENNAN, INCORPORATED
3303 WILSHIRE BOULEVARD
LOS ANGELES, CALIFORNIA 90010

NAME AND ADDRESS OF INSURED
HUGHES AIRCRAFT COMPANY
POST OFFICE BOX 1042
EL SEGUNDO, CALIFORNIA 90245

COMPANIES AFFORDING COVERAGES

COMPANY LETTER	
A	HARTFORD ACCIDENT & INDEMNITY COMPANY
B	TWIN CITY FIRE INSURANCE COMPANY
C	HARTFORD FIRE INSURANCE COMPANY
D	
E	

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)	EACH OCCURRENCE	AGGREGATE
A	GENERAL LIABILITY [X] COMPREHENSIVE FORM [X] PREMISES—OPERATIONS [X] EXPLOSION AND COLLAPSE HAZARD [X] UNDERGROUND HAZARD [X] PRODUCTS/COMPLETED OPERATIONS HAZARD [X] CONTRACTUAL INSURANCE [X] BROAD FORM PROPERTY DAMAGE [X] INDEPENDENT CONTRACTORS [X] PERSONAL INJURY	56 CLR P10611E 56 JPR P10612E	1-1-84 1-1-84	BODILY INJURY PROPERTY DAMAGE	$ $	$ $
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$ 1,000	$ 1,000
				PERSONAL INJURY		$
A	AUTOMOBILE LIABILITY [X] COMPREHENSIVE FORM [X] OWNED [X] HIRED [X] NON-OWNED	56 CLR P10611E	1-1-84	BODILY INJURY (EACH PERSON) BODILY INJURY (EACH ACCIDENT)	$ $	
				PROPERTY DAMAGE	$	
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$ 1,000	
	EXCESS LIABILITY [ ] UMBRELLA FORM [ ] OTHER THAN UMBRELLA FORM			BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
	WORKERS' COMPENSATION and EMPLOYERS' LIABILITY	56WBR P10608E 56WBR P10609E 56WBR P10610E 56 WBR P10613E	1-1-84	STATUTORY		
					$ 1,000,000	
	OTHER Notwithstanding any requirement, term or condition of any contract or other document with respect to which the certificate is issued, the insurance afforded by the policies listed on the certificate is subject to all the terms, exclusions and conditions of such policies.					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

Cancellation: Should any of the above described policies be cancelled or materially changed before the expiration date thereof, the issuing company will endeavor to mail 30 days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

No. 152

NAME AND ADDRESS OF CERTIFICATE HOLDER
California State Department of Health Services
Hazardous Waste Management Branch
744 P Street
Sacramento, Ca. 95814

DATE ISSUED March 28, 1983

AUTHORIZED REPRESENTATIVE

MARSH & McLENNAN, INCORPORATED

SET TAB STOPS AT ARROWS

Certificate of Insurance

acord

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

NAME AND ADDRESS OF AGENCY

STEWART SMITH WEST, INC.
3200 WILSHIRE BLVD.
LOS ANGELES, CA. 90010

COMPANIES AFFORDING COVERAGES

COMPANY LETTER A GREAT AMERICAN SURPLUS LINES INSURANCE COMPANY

COMPANY LETTER B

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

NAME AND ADDRESS OF INSURED

HUGHES AIRCRAFT COMPANY
BLDG. C-2, MAIL STATION A-130
P. O. BOX 1042
EL SEGUNDO, CA. 90245

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)	EACH OCCURRENCE	AGGREGATE
	GENERAL LIABILITY ☐ COMPREHENSIVE FORM ☐ PREMISES—OPERATIONS ☐ EXPLOSION AND COLLAPSE HAZARD ☐ UNDERGROUND HAZARD ☐ PRODUCTS-COMPLETED OPERATIONS HAZARD ☐ CONTRACTUAL INSURANCE ☐ BROAD FORM PROPERTY DAMAGE ☐ INDEPENDENT CONTRACTORS ☐ PERSONAL INJURY			BODILY INJURY	$	$
				PROPERTY DAMAGE	$	$
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
				PERSONAL INJURY		$
	AUTOMOBILE LIABILITY ☐ COMPREHENSIVE FORM ☐ OWNED ☐ HIRED ☐ NON-OWNED			BODILY INJURY (EACH PERSON)	$	
				BODILY INJURY (EACH ACCIDENT)	$	
				PROPERTY DAMAGE	$	
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	
	EXCESS LIABILITY ☐ UMBRELLA FORM ☐ OTHER THAN UMBRELLA FORM			BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
	WORKERS' COMPENSATION and EMPLOYERS' LIABILITY			STATUTORY		
					$	
A	OTHER ENVIROMENTAL IMPAIRMENT LIAB.	2CM 00846	5/21/83	$10,000,000 SINGLE LOSS/ $20,000,000 TOTAL ALL LOSSES DURING POLICY PERIOD EXCESS*		

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

This Certificate of Insurance is not an insurance policy and does not amend or alter the covera afforded by the policy listed on the Certificate.
Notwithstanding any requirement, term or condition of any contract or other document with respec to which the certificate is issued, the insurance afforded by the policy listed on the Certific is subject to all the terms of such policy.

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail ~~10~~ days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

* OF A SELF-INSURED RETENTION OF $250,000 EACH LOSS

NAME AND ADDRESS OF CERTIFICATE HOLDER

California State Department of Health Services
Hazardous Waste Management Branch
744 P Street
Sacramento, Ca. 95814

DATE ISSUED March 28, 1983

AUTHORIZED REPRESENTATIVE

SET TAB STOPS AT ARROWS

Certificate of Insurance

acord

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER
THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

NAME AND ADDRESS OF AGENCY
STEWART SMITH WEST, INC.
3200 WILSHIRE BLVD.
LOS ANGELES, CA. 90010

COMPANIES AFFORDING COVERAGES

COMPANY LETTER A ALLIANZ UNDERWRITERS, INC.

COMPANY LETTER B

NAME AND ADDRESS OF INSURED
HUGHES AIRCRAFT COMPANY
BLDG. C-2, MAIL STATION A-130
P. O. BOX 1042
EL SEGUNDO, CA. 90245

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)	EACH OCCURRENCE	AGGREGATE
	GENERAL LIABILITY ☐ COMPREHENSIVE FORM ☐ PREMISES—OPERATIONS ☐ EXPLOSION AND COLLAPSE HAZARD ☐ UNDERGROUND HAZARD ☐ PRODUCTS/COMPLETED OPERATIONS HAZARD ☐ CONTRACTUAL INSURANCE ☐ BROAD FORM PROPERTY DAMAGE ☐ INDEPENDENT CONTRACTORS ☐ PERSONAL INJURY			BODILY INJURY	$	$
				PROPERTY DAMAGE	$	$
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
				PERSONAL INJURY		$
	AUTOMOBILE LIABILITY ☐ COMPREHENSIVE FORM ☐ OWNED ☐ HIRED ☐ NON-OWNED			BODILY INJURY (EACH PERSON)	$	
				BODILY INJURY (EACH ACCIDENT)	$	
				PROPERTY DAMAGE	$	
				BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	
	EXCESS LIABILITY ☐ UMBRELLA FORM ☐ OTHER THAN UMBRELLA FORM			BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
	WORKERS' COMPENSATION and EMPLOYERS' LIABILITY			STATUTORY		
					$	
A	OTHER EXCESS ENVIROMENTAL IMPAIRMENT LIAB.	AUX5 20 07 47	5/21/83	$5,000,000 ANY ONE LOSS/ $10,000,000 TOTAL ALL LOSSES DURING THE POLICY PERIOD *		

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

This Certificate of Insurance is not an insurance policy and does not amend or alter the coverage afforded by the policy listed on the Certificate
Notwithstanding any requirement, term or condition of any contract or other document with respect to which the certificate is issued, the insurance afforded by the policy listed on the Certificate is subject to all the terms of such policy.

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 10 days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

*EXCESS OF $10,000,000 SINGLE LOSS/$20,000,000 TOTAL ALL LOSSES DURING THE POLICY PERIOD EXCESS OF A SELF-INSURED RETENTION OF $250,000 EACH LOSS.

NAME AND ADDRESS OF CERTIFICATE HOLDER
California State Department of Health Services
Hazardous Waste Management Branch
744 P Street
Sacramento, Ca. 95814

DATE ISSUED March 28, 1983

AUTHORIZED REPRESENTATIVE

SERVICE ORDER
OIL PROCESS CO.

24353

SINCE 1935

5756 ALBA STREET • LOS ANGELES, CALIFORNIA 90058 • (213) 585-5063

Company HUGHES AIRCRAFT Co. Date 6-7-83

Billing Address 3100 W. LOMITA BLVD Driver ROBERT

City TORRANCE, CA. 90509 P. O. No. 17

Pick-up Address SAME W/H No. 8278567

Service Performed PUMP up SOLVENT SUMP. ΔP× 2400 GLS.

Commodity: MIXED SOLVENT

Ph 7 Bbls. 60

No. of Loads 1 Destination BKK

Start 10:30 A.M. Stop 12:00 NOON Gross Time _____ Hours

Start _____ M. Stop _____ .M. Gross Time _____ Hours

Received by John C. [illegible] Total Hours _____ Hours

State of California—Health and Welfare Agency

Department of Health Services

HAZARDOUS MATERIALS MANAGEMENT SECTION
744 P Street
Sacramento, CA 95814

UNIFORM HAZARDOUS WASTE MANIFEST

(Please print or type with ELITE type (12 characters per inch).

STATE ID NUMBER 8278567

TO BE FILLED IN BY THE GENERATOR

GENERATOR NAME AND MAILING ADDRESS
Hughes Aircraft Company
3100 W. Lomita Blvd., Torrance, Calif., 90509
AREA CODE/PHONE NUMBER (213) 517-6000

MANIFEST DOCUMENT NUMBER
EPA ID NUMBER CAD041666819

TRANSPORTER NO. 1
Cal Pacific Oil and Vacuum, Inc.
5753 Alameda St., L. A., Calif., 90058

VEH./CONTAINER NO. 4234
EPA ID NUMBER CAD000062961 8

TRANSPORTER NO. 2/ALTERNATE TSD FACILITY

EPA ID NUMBER

TREATMENT, STORAGE, OR DISPOSAL (TSD) FACILITY
BKK
2210 S. Azusa, West Covina, Calif., 91791
AREA CODE/PHONE NUMBER (213) 965-0911

EPA ID NUMBER CAD006778674 9

PROPER U.S. D.O.T. SHIPPING NAME AND HAZARD CLASS	UN/NA NUMBER	TOTAL QUANTITY	UNIT WT/VOL	CONTAINER NO.	TYPE	WASTE CAT. NO.
Solvent - Flammable	1993	~~1200~~ 400	Gal.	001	TC	66
				001	TC	

COMPONENTS	CONC. UPPER	RANGE LOWER	UNITS %	UNITS ppm
Acetone	27	21	X	
Methanol	25	19	X	
Tetrachloroethane	21	15	X	
Freon	8	2	X	
1, 1, 1, Trichloroethane	7	1	X	
Benzene	5	1	X	

SPECIAL HANDLING INSTRUCTIONS
Gloves, Goggles

Note: Components include approximately 20% water and (5%) miscellaneous flammables.

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA.

PRINTED OR TYPED FULL NAME AND SIGNATURE Janice Nickel Janice Nickel MO. 06 DAY 07 YR. 83

☐ CHECK IF CONTINUATION SHEET IS USED. NUMBER OF CONTINUATION SHEETS _____

TO BE FILLED IN BY TRANSPORTER

TRANSPORTER 1 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE MATERIALS — DATE REC'D & ACCEPTED

ROBERT SALAMPOSSY Robert Salampossy MO. 06 DAY 07 YR. 83

PRINTED OR TYPED FULL NAME AND SIGNATURE

TRANSPORTER 2 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE MATERIALS — DATE REC'D & ACCEPTED

MO. DAY YR.

PRINTED OR TYPED FULL NAME AND SIGNATURE

TO BE FILLED IN BY TSDF

DISCREPANCY INDICATION SPACE

Facility owner or operator: Certification of receipt of hazardous material covered by this manifest except as noted in the discrepancy indication space above. Note: TSDF must complete waste number. See instructions. — DATE REC'D & ACCEPTED

EPA ID NUMBER MO. DAY YR.

PRINTED OR TYPED FULL NAME AND SIGNATURE

Original—White—Disposer send to DHS; Green—Hauler; Yellow—Disposer; Pink—Generator

DHS 8022 (7/82)

SEE REVERSE SIDE FOR INSTRUCTIONS. PLEASE TYPE OR PRINT CLEARLY. PRESS HARD

249011

CALIFORNIA HAZARDOUS WASTE MANIFEST 100

STATE DEPARTMENT OF HEALTH SERVICES
HAZARDOUS MATERIALS MANAGEMENT SECTION
744 P STREET, SACRAMENTO, CA 95814

① MANIFEST NO. 088—[illegible]

GENERATOR (GENERATOR MUST COMPLETE)

② NAME Hughes Aircraft - EDD
EPA NO. CAD041666819
ADDRESS 3100 W. Lomita PHONE NO. 517-6000
CITY, STATE, ZIP Torrance, CA 90509

③ ~~DESIGNATED~~ ALTERNATE T.S.D. FACILITY AUTHORIZED TO OPERATE AS APPROVED STATE OR FEDERAL PROGRAM.
NAME IT Transportation
EPA NO. CAD029654894
ADDRESS 221 E. Wilmington PHONE NO. 518-4700
CITY, STATE, ZIP Wilmington, CA

④ ~~ALTERNATE~~ DESIGNATE TSD FACILITY
NAME BKK Corporation
EPA NO. CAD067786749
ADDRESS 2210 S. Azusa PHONE NO. 965-0916
CITY, STATE, ZIP West Covina, CA

№ 121659

⑤ U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN / NA I.D. NO.	WEIGHT OR VOLUME	UNITS
WASTE Solvent, NOS	combustible liquid	NA1993	1500gal	
WASTE				

CONTAINER NO. 0
TYPE ☐ DRUMS ☐ BAGS ☐ CARTONS ☒ TANK TRUCK ☐ DUMP TRUCK ☐ OTHER

⑥ WASTE CATEGORY 66
⑦ EX. HAZ. WASTE PERMIT NO. N/A
⑧ GENERATING PROCESS solvent tank water test

⑨ LIST COMPONENTS

	CONC. RANGE UPPER	CONC. RANGE LOWER			CONC. RANGE UPPER	CONC. RANGE LOWER
A. water	95	92	X ☐%☐PPM	E.		☐%☐PPM
B. mixed solvents	5	2	☒%☐PPM	F.		☐%☐PPM
C.			☐%☐PPM	G.		☐%☐PPM
D.			☐%☐PPM	NON HAZARDOUS MATERIAL ____ %		

⑩ WASTE PROPERTIES pH 7 ☐ TOXIC ☐ FLAMMABLE ☐ CORROSIVE/IRRITANT ☐ REACTIVE ☐ SENSITIZER ☐ CARCINOGEN/MUTAGEN
⑪ PHYSICAL STATE: ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ GAS ☐ OTHER
⑫ SPECIAL HANDLING INSTRUCTIONS: ☒ GLOVES ☒ GOGGLES ☐ RESPIRATOR ☐ OTHER

GENERATOR CERTIFICATION: THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND EPA.

IN THE EVENT OF A SPILL CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

⑬ [signature] HO EH&S — SIGNATURE OF AUTHORIZED AGENT AND TITLE
7/1/83 — DATE SHIPPED

TRANSPORTER (HAULER MUST COMPLETE)

⑭ NAME IT TRANSPORTATION CORPORATION EPA NO. CAD029654894
ADDRESS 221 EAST "D" STREET CITY WILMINGTON STATE CA ZIP 90744
PHONE NO.: (213) 835-5684 TRUCK # 188 550

⑮ PICK UP DATE 7-1-83 TIME 1:45 ☐ AM ☒ PM
⑯ [signature] — SIGNATURE OF AUTHORIZED AGENT AND TITLE
7-1-83 — DATE SHIPPED

TSD FACILITY (FACILITY OPERATOR MUST COMPLETE)

⑰ NAME BKK
EPA NO. CAD067786749
⑱ QUANTITY (IF MEASURED) (66-214) 587 (V)
⑲ STATE FEE (IF ANY) 3757 PHONE NO.
⑳ INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT NO SWEETS ODOR / BKK PH=7
㉒ IF WASTE IS HELD FOR DELIVERY ELSEWHERE SPECIFY THE DESIGNATED TSD FACILITY
NAME EPA NO.

㉑ HANDLING OR DISPOSAL METHOD
☐ SURFACE IMPOUNDMENT ☐ LANDFILL
☐ INJECTION WELL ☐ LAND TREATMENT
☐ TREATMENT (SPECIFY)
☐ RECOVERY OR REUSE
☐ STORAGE/TRANSFER

㉓ [signature] — SIGNATURE OF AUTHORIZED AGENT AND TITLE
7/7/83 — DATE ACCEPTED

EPA WASTE NUMBER

Department of Health Services

State of California—Health and Welfare Agency
HAZARDOUS WASTE MANAGEMENT BRANCH
744 P Street
Sacramento, CA 95814

UNIFORM HAZARDOUS WASTE MANIFEST

STATE ID NUMBER 83081149

Print or type with ELITE type (12 characters per inch). LAX-A14725

TO BE FILLED IN BY GENERATOR

GENERATOR NAME AND MAILING ADDRESS
Hughes Aircraft Company
3100 W. Lomita Bl., Torrance, CA 90509
AREA CODE/PHONE NUMBER (213) 517-6000

MANIFEST DOCUMENT NUMBER
EPA ID NUMBER CAD041666819

TRANSPORTER NO. 1
J. C. Inc. (213) 268-3137
2221 Loma St., So. El Monte, CA 91733

VEH./CONTAINER NO. 2563
EPA ID NUMBER CAD058018361

TRANSPORTER NO. 2/ALTERNATE TSD FACILITY

VEH./CONTAINER NO.
EPA ID NUMBER

TREATMENT, STORAGE, OR DISPOSAL (TSD) FACILITY
KETTLEMAN HILLS (EDS)
430 W ELM
COALINGA, CA 93210 (209) 935-2002
AREA CODE/PHONE NUMBER

EPA ID NUMBER CAT08001028

PROPER U.S. D.O.T. SHIPPING NAME AND HAZARD CLASS	UN/NA NUMBER	TOTAL QUANTITY	UNIT WT/VOL	CONTAINER NO.	CONTAINER TYPE	WASTE CAT NO.	DISPOSAL METHOD
HAZARDOUS SOLID, NOS Empty solvent tank	UN9189	1	TANK				0

COMPONENTS	CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS %	UNITS PPM
Empty solvent tank ~~once contained~~: Steel 100% ONCE CONTAINED				
Acetone Methanol Trichloroethane Freon Trichloroethylene	less than 1%			

SPECIAL HANDLING INSTRUCTIONS

This is to certify that the above-named wastes are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable requirements of the Department of Transportation and the EPA.

Printed or typed full name and signature P. F. Mahlow, Jr.

MO. 08 DAY 12 YR. 83

☐ Check if continuation sheet is used. Number of continuation sheets

TO BE FILLED IN BY TRANSPORTER

TRANSPORTER 1 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES
HARALD BUEHLER 307 T-23 W 3+75 S
Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

TRANSPORTER 2 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES
Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

TO BE FILLED IN BY TSDF

DISCREPANCY INDICATION SPACE

$\frac{4 \times 4 \times 10}{27} = 5.9\ 40^3$

Facility owner or operator: Certification of receipt of hazardous waste covered by this manifest except as noted in the discrepancy indication space above. Note: TSDF must complete waste number. See instructions.

Printed or typed full name and signature

EPA ID NUMBER CAT000646777

DATE RECEIVED & ACCEPTED MO. 08 DAY 12 YR. 83

WORK ORDER

83081149

39755

jc INCORPORATED

Liquid Waste Disposal

3650 East 26th Street
Vernon, California 90023
(213) 268-3137

SOLD TO: HUGHES AIRCRAFT
3100 W. LOMITA
TORRANCE CA. 90509

LOCATION:

DATE	CUSTOMER ORDER NO	LOADS	DUMPED AT	TRUCK	TANK CAPACITY
08-12-85		1	KC	307 723	FLAT BED

SERVICES PERFORMED

(1) P/U (1) SMALL CONTAMINATED TNK FOR DISP.

	TIME START	TIME FINISH	HOURS	HOURS	RATE	EXTENSION
YARD			TOTAL	TRUCK	$	$
DOWN-TIME			LESS	LABOR	$	$
STAND-BY			LESS	DUMP	$	$
DRIVER [signature]			NET		TOTAL	$

HELPER

Thank You...

APPROVED BY [signature]

Department of Health Services

State of California—Health and Welfare Agency
HAZARDOUS WASTE MANAGEMENT BRANCH
1444 P Street
Sacramento, CA 95814

UNIFORM HAZARDOUS WASTE MANIFEST

STATE ID NUMBER 8 3081150

Please print or type with ELITE type (12 characters per inch).

TO BE FILLED IN BY GENERATOR

GENERATOR NAME AND MAILING ADDRESS

Hughes Aircraft
3100 W. Lomita Blvd., Torrance, CA 90509

AREA CODE/PHONE NUMBER

MANIFEST DOCUMENT NUMBER

EPA ID NUMBER CAD041666819

TRANSPORTER NO. 1

J. C. Inc. (213) 268-3137
2221 Loma St.
So. El Monte, CA 91733

VEH./CONTAINER NO.

EPA ID NUMBER CAD058018367

TRANSPORTER NO. 2/ALTERNATE TSD FACILITY

VEH./CONTAINER NO.

EPA ID NUMBER

TREATMENT, STORAGE, OR DISPOSAL (TSD) FACILITY

BKK Landfill
2210 S. Azusa Ave., West Covina, CA 91790
(213) 965-0916

AREA CODE/PHONE NUMBER

EPA ID NUMBER CAD067786744

PROPER U.S. D.O.T. SHIPPING NAME AND HAZARD CLASS	UN/NA NUMBER	TOTAL QUANTITY	UNIT WT/VOL	CONTAINER NO.	CONTAINER TYPE	WASTE CAT NO.	DIS MET
Hazardous Waste, N.O.S. ORM-E	UA9189	3.5 X	cu yd				

COMPONENTS	CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS %	UNITS PPM
Soil contaminated with less than 1% combined of following:	1 %	.02 %	X	
Acetone				
Perchloroethylene				
Trichloroethane				
Trichloroethylene				

SPECIAL HANDLING INSTRUCTIONS

Gloves

This is to certify that the above-named wastes are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable requirements of the Department of Transportation and the EPA.

Printed or typed full name and signature P. F. Mahlow, Jr.

MO. 08 DAY 23 YR. 83

☐ Check if continuation sheet is used. Number of continuation sheets

TO BE FILLED IN BY TRANSPORTER

TRANSPORTER 1 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

TRANSPORTER 2 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

TO BE FILLED IN BY TSDF

DISCREPANCY INDICATION SPACE

Facility owner or operator: Certification of receipt of hazardous waste covered by this manifest except as noted in the discrepancy indication space above. Note: TSDF must complete waste number. See instructions.

EPA ID NUMBER

DATE RECEIVED & ACCEPTED MO. DAY YR.

ate of California– Health and Welfare Agency
AZARDOUS WASTE MANAGEMENT BRANCH
4 P Street
acramento, CA 95814

Department of Health Services

UNIFORM HAZARDOUS WASTE MANIFEST

STATE ID NUMBER 8 3081151

rint or type with ELITE type (12 characters per inch).

GENERATOR NAME AND MAILING ADDRESS	MANIFEST DOCUMENT NUMBER / EPA ID NUMBER
Hughes Aircraft 3100 W. Lomita Blvd., Torrance, CA 90509 AREA CODE/PHONE NUMBER	CAD041666819

TRANSPORTER NO. 1	VEH./CONTAINER NO.	EPA ID NUMBER
J. C. Inc. 2221 Loma St. So. El Monte, CA 91733 (213) 268-3137		CAD058018367

TRANSPORTER NO. 2/ALTERNATE TSD FACILITY	VEH./CONTAINER NO.	EPA ID NUMBER

TREATMENT, STORAGE, OR DISPOSAL (TSD) FACILITY	EPA ID NUMBER
BKK Landfill 2210 S. Azusa Ave., West Covina, CA 91790 (213) 965-0916 AREA CODE/PHONE NUMBER	CAD067786741

PROPER U.S. D.O.T. SHIPPING NAME AND HAZARD CLASS	UN/NA NUMBER	TOTAL QUANTITY	UNIT WT/VOL	CONTAINER NO.	CONTAINER TYPE	WASTE CAT NO.	DISP METH
Hazardous Waste, N.O.S. ORM-E	NA8189	3.5	cu yd				

COMPONENTS	CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS %	UNITS PPM
Soil contaminated with less than 1% combined of following: Acetone	1 %	.02%	X	
Perchloroethylene				
Trichloroethane				
Trichloroethylene				

SPECIAL HANDLING INSTRUCTIONS

This is to certify that the above-named wastes are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable requirements of the Department of Transportation and the EPA.

Printed or typed full name and signature P. F. Mahlow, Jr. MO. 08 DAY 23 YR. 83

☐ Check if continuation sheet is used. Number of continuation sheets

TRANSPORTER 1 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Joel M Larsen

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. 08 DAY 23 YR. 83

TRANSPORTER 2 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

DISCREPANCY INDICATION SPACE

Facility owner or operator: Certification of receipt of hazardous waste covered by this manifest except as noted in the discrepancy indication space above. Note: TSDF must complete waste number. See instructions.

EPA ID NUMBER

DATE RECEIVED & ACCEPTED MO. DAY YR.

Printed or typed full name and signature

TO BE FILLED IN BY GENERATOR

TO BE FILLED IN BY TRANSPORTER

e of California—Health and Welfare Agency
ZARDOUS WASTE MANAGEMENT BRANCH
P Street
ramento, CA 95814

Department of Health Servic

UNIFORM HAZARDOUS WASTE MANIFEST

STATE ID NUMBER 8 3081152

print or type with ELITE type (12 characters per inch).

GENERATOR NAME AND MAILING ADDRESS

Hughes Aircraft Company
3100 W. Lomita Blvd., Torrance, CA 90509

AREA CODE/PHONE NUMBER

MANIFEST DOCUMENT NUMBER

EPA ID NUMBER CAD041666819

TRANSPORTER NO. 1

(213) 268-3137

J. C. Inc.
2221 Loma St.
So. El Monte, CA 91733

VEH./CONTAINER NO.

EPA ID NUMBER CAD058018336

TRANSPORTER NO. 2/ALTERNATE TSD FACILITY

VEH./CONTAINER NO.

EPA ID NUMBER

TREATMENT, STORAGE, OR DISPOSAL (TSD) FACILITY

BKK Landfill
2210 S. Azusa Ave., West Covina, CA 91790
(213) 965-0916

AREA CODE/PHONE NUMBER

EPA ID NUMBER CAD067786774

PROPER U.S. D.O.T. SHIPPING NAME AND HAZARD CLASS	UN/NA NUMBER	TOTAL QUANTITY	UNIT WT/VOL	CONTAINER NO.	CONTAINER TYPE	WASTE CAT NO.	DI ME
Hazardous Waste, N.O.S. ORM-E	NA9189	00007	cu yd				

COMPONENTS	CONC. RANGE UPPER	CONC. RANGE LOWER	UNITS %	UNITS PP
Soil contaminated with less than 1% combined of following:				
Acetone				
Perchloroethylene	1 %	.02%	X	
Trichloroethane				
Trichloroethylene				

SPECIAL HANDLING INSTRUCTIONS

This is to certify that the above-named wastes are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable requirements of the Department of Transportation and the EPA.

Printed or typed full name and signature P. F. Mahlow, Jr.

MO. 08 DAY 23 YR. 83

☐ Check if continuation sheet is used. Number of continuation sheets

TRANSPORTER 1 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Joel M Larsen

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. 08 DAY 23 YR. 83

TRANSPORTER 2 ACKNOWLEDGEMENT OF RECEIPT OF ABOVE WASTES

Printed or typed full name and signature

DATE REC'D & ACCEPTED MO. DAY YR.

DISCREPANCY INDICATION SPACE

acility owner or operator: Certification of receipt of hazardous waste covered by this manifest except as noted n the discrepancy indication space above. Note: TSDF must complete waste umber. See instructions.

EPA ID NUMBER

DATE RECEIVED & ACCEPTED MO. DAY YR.

rinted or typed full name and signature

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

GROUND WATER PROTECTION PROGRAM
UNDERGROUND TANK INVESTIGATION FORM

(Use Separate form for each facility address.) I.D. No. _____

I. Company Name: Hughes Aircraft Company

II. Facility Address: 3100 W. Lomita Blvd.
Torrance, CA 90509

Thomas Guide ref. (page & grid no.) Pg 68 - B-6

III. SIC Code(s): 3471, 3673, 3679

A. EPA I.D. No. (RCRA) CAD 041666819

B. City Permit No. None

C. County Permit No. 2387

D. Others _____

IV. Firm Representative: P. F. Mahlow, Jr.

A. Title Head, Environmental Health and Safety

B. Phone No. (213) 517-5032

V. Type of Industry: Electronic component development and manufacturing

VI. Type of storage facilities located at the site.

A. Underground non-waste storage tanks (1: gasoline 1: diesel fuel)

Yes X No _____ Total Number 2

B. Underground waste storage tanks (1 vaulted, waste solvent tank)

Yes X No _____ Total Number 1

I.D. No. _____

VI. (Con't.)

C. Above ground non-waste storage tanks not applicable, liquified gas storage only: ammonium, argon, hydrogen, nitrogen
Yes _____ No _____ Total Number _____

D. Above ground waste storage tanks

Yes _____ No X Total Number 0

E. Underground waste treatment ~~tanks~~ systems (Including pretreatment tanks and clarifiers for sewer discharges) (closed system cyanide treatment/closed system acid clarifyer)

Yes X No _____ Total number 2

VII. Please complete a Tank Information Form (one copy attached, please make additional copies as needed) for each tank in Item VI.

VIII. Piping - above ground estimated length 2000' for waste chemical systems underground estimated length 550'

Chemical names and CAS numbers of materials carried: see attachment

Date(s) installed/tested: piping for solvent tank (June 83)
piping for cyanide treatment system (July 83)
piping for acid treatment system (June 74)
piping for gasoline tank (June 79), piping for diesel (1967)

Gravity flow X Pressure flow no Piping material galvanized, durham, PVC

Corrosion protection - Cathodic X Coated X Wrapped _____

Remarks: PVC is not coated

IX. Type of storage facilities which have been removed or abandoned in place.

A. Underground non-waste storage tanks Yes _____ No X

Total number of abandoned tanks 0

Chemical names and CAS numbers of all materials which have ever been stored in tanks:
no non-waste underground storage tanks abandoned or removed.

I.D. No. _____

IX. A. (Con't.)

Type of abandonment - Removal N/A Date(s) Removed _____

Abandoned in place - Filled N/A (give material) Unfilled _____

Date(s) of abandonment N/A

B. Underground waste storage tanks Yes X No _____

Total number of ~~abandoned tanks~~ removed systems 2, removed June and July 1983

Chemical names and CAS numbers of all materials which have ever been stored in tanks: current information is that material stored was some or all of the materials listed in "item VIII" plus benzene CAS 71-43-2, chloroform CAS 67-66-3

Type ~~of abandonment~~ - Removal X Date(s) Removed June 83 July 83

Abandoned in place - Filled N/A (give material) Unfilled N/A

Date(s) of abandonment N/A

C. Underground tank piping Yes X No _____

Type of ~~abandonment~~ - Removal X Abandoned in place N/A

Dates of ~~abandonment~~ piping removed in June & July 1983

Chemical names and CAS numbers of all materials which have ever been carried:
same as IX B.

D. Underground waste treatment ~~tanks~~ systems Yes X No _____

Total number of ~~abandoned tanks~~ removed systems one - cyanide treatment system, Aug 83

Type of ~~abandonment~~ - Removal X Date(s) Removed August 83

Abandoned in place - Filled N/A (give material) Unfilled N/A

Chemical names and CAS numbers of all materials which have ever been stored in the treatment facility:
No materials stored in this continuous flow, closed treatment system. Cyanides (CAS 57-12-5) treated.

I.D. No. _____

X. Finally, as you know spills of hazardous materials can have a deleterious impact upon the underlying groundwaters.

A. Do you have a spill prevention program? Yes X No _____

Give a brief description: Training for the careful handling of chemicals, and procedures to monitor tank content level manually. Design of the system included redundant protections with regard to the tank in a vault, also allowing for inspection.

B. Do you have procedures to be followed in the event of a spill?

Yes XX No _____

Give a brief description: Procedures include steps to identify and evaluate character and hazard of spill and implementation of clean up steps and appropriate reporting.

XI. The form shall be signed below as follows:

A. In the case of corporations, by a principal executive officer at the level of vice-president or his duly authorized representative if such representative is responsible for the overall operation of the facility where the tanks are located, or

B. In the case of a partnership, by a general partner, or

C. In the case of a sole proprietorship, by the proprietor, or

D. In the case of a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

This form has been completed under penalty of perjury and, to the best of my knowledge, is true and correct.

Signature: M. V. Kreismanis Date: 10/10/83

Printed Name: Mo Kreismanis Phone No. (213) 517-6071

Title: Division Manager

Contact Name (if different from above): Paul F. Mahlow, Jr.

Title: Head, Environmental Health and Safety Phone No. (213) 517-5032

Date 6/22/88

UNDERGROUND STORAGE TANK INVENTORY

TORRANCE (IEG)

LOCATION	TANK NO.	CAPAC. GAL.	CONTENTS	COMMENTS
3100 W. Lomita Blvd. Lomita	—	10,000	unleaded gasoline	Permit No.: No identification. Permit Status: Permit to install and operate issued by Torrance Fire Dept. 10/21/86. Construction Type: double-walled, fiberglass, continuous monitoring. Adjacent Bldg. No.: 232. Date Installed: 1986. Action Items/Dates: None. This Tank replaced a single-walled steel Tank (closure approved 9/86)
	—	2000	waste solvents	Permit No.: Should be covered under RCRA Part A, ISD, status. Permit Status: Application for permit to operate also filed with Torrance F.D. (3/89). Construction Type: steel, vaulted. Adjacent Bldg. No.: 232. Date Installed: 1983. Action Items/Dates: Confirm permit coverage under Part A

UNDERGROUND STORAGE TANK INVENTORY

LOCATION	TANK NO.	CAPAC. GAL.	CONTENTS	COMMENTS
(Torrance)	—	3000	Waste Solvents	Permit No.: None Permit Status: Application for permit to operate submitted to Torrance F.D. (3/89) Construction Type: Stainless steel, vaulted Adjacent Bldg. No.: 235 Date Installed: 1986 Action Items/Dates: Follow up on permit application
	—	480	Tank removed (formerly diesel storage)	Permit No.: — Permit Status: Closure pending RWQCB approval Construction Type: Steel Adjacent Bldg. No.: 235 Date Installed: unknown Action Items/Dates: Follow up on report submitted (4/89) to RWQCB

May 1, 1991 HAC Comments About February 14, 1986
Document from Timothy Berry to "To Whom It May Concern".

Timothy Berry is no longer employed by HAC and we have not been able to reach him to discuss this document with him. We believe that it was sent to DHS. We have been unable to find any information about, or any analytical results for, the "wipe samples" referenced in numbered paragraph 1.

Mr. Berry's comment about the lack of contamination may have been the result of his being unaware of the HMI and Manufacturing Laboratory testing. In any event, HAC believes that all those test results have now been made available to California and federal agencies.

Mr. Berry's statement that in 1986 HAC had no "inground hazardous waste tanks" may have resulted from his understanding that the Current Tank was, of course, not covered by and surrounded with soil but was within a concrete vault.

Should you have any questions about this document, please call us.

STATE OF CALIFORNIA

OFFICE MEMO
STD. 100 (REV. 1)

7/15/83

TO:

Dave W.

ROOM NUMBER

FROM:

Nestor

PHONE NUMBER

SUBJECT: HUGHES AIRCRAFT - Torrance CAD041666813
(213) 517-5032

Pat O'Brien is on vacation but called me 7/1 p.m. to report that one of their subsurface tanks they were phasing out was found to have leaked.

Please get all the details from PAUL MATHOW, facility contact. Document telecon + inform the Regional Board.

Discuss further actions, if any, with the Regional Board.

Thanks.

RAH 7/21 coordinate w/ DOHS, if they can interest

~~JMW~~ 7/21 ~~HY~~ 7/21 7/20/8

mw 7/19

TO: ~~Josh Workman~~

FROM: Al Novak 7/15/83

SUBJECT: Investigation of solvents in soil - Hughes Electron Dynamics Division

BACKGROUND: The Hughes Electron Dynamics Division, located at 3100 W. Lomita Blvd. in Torrance notified State DOHS-HMMS that results of analyses of soil samples taken near an underground waste solvent tank showed high levels of PCE, TCE and other solvents. These samples were taken from 3 test holes bored near two waste solvent tanks which have since been removed (See 7/6/83 report for details). The site was inspected 7/5/83 by Dave Bacharowski and myself. At that time Hughes did not have the report back from their lawyers that included the analyses of the soil samples. We received this report 7/12/83. ✓

DISCUSSION: The Hughes representative is Pat O'Brien (Assistant Corporate Manager - Environmental Health and Safety 414-6372) who was present at the site during our inspection. He believes the lab data shows that while there are high levels of some solvents, he believes this material is trapped in the soil and that when their new building is constructed over the site there will be no possibility of this material migrating to groundwater.

Based on what?

Three test holes were drilled near Solvent Disposal Tank 1: T-1 (7 ft south of tank centerline), T-2 (25 ft east of the tank), and T-4 (40 ft south of tank) - see sketch.

Test Hole T-1 was drilled to a depth of 49 ft and had the highest levels of volatile organic compounds of the 3 holes. ~~PCE ranged from 62 - 140,000 ppb, TCE ranged from 26 - 19,000 ppb; TCA 620 - 18,000 ppb, Toulene 550 - 1,200 ppb, Methylene Chloride 54 - 340 ppb.~~ The highest values were obtained at (31 ft below ground). Other organics present at 31 ft included Acetone 521 ppb, Chlorobenzene 740 ppb, 1,1,-Dichloroethylene 1,200 ppb and Ethyl Benzene 610 ppb. Below 31 ft the levels dropped off significantly for example at 39 ft: Acetone 30 ppb, Chlorobenzene ND, 1,1,-Dichloroethylene ND, Ethylbenzene ND, Methylene Chloride 72 ppb, PCE 62 ppb, Toulene ND, 111-Trichloroethane ND, ~~TCE ND~~ (at 49 ft) the only organics detected were Chloroform 23 ppb (detected above 31 ft also), ~~PCE 62 ppb and TCE 26 ppb.~~

Test Hole T-2 was drilled to a depth of 30 ft and at that depth the only organics detected were Chloroform 22 ppb, Methylene Chloride 28 ppb, PCE 160 ppb, 111-Trichloroethane 53 ppb and TCE 230 ppb.

Test Hole T-4 was also drilled to 30 ft and only two solvents showed up at that depth: Acetone 180 ppb and TCE 25 ppb.

From the lab results it appears that the heaviest concentration of organic solvents is located at the 30 ft level in the vicinity of Test Hole T-1. While some organics were found in the other two test holes (T-2, T-4) the results do not seem to indicate the heavy concentrations found in hole T-1. However holes T-2 and T-4 were only drilled ~~to a depth of 30' so there is no~~ indication of what may lie below this depth.

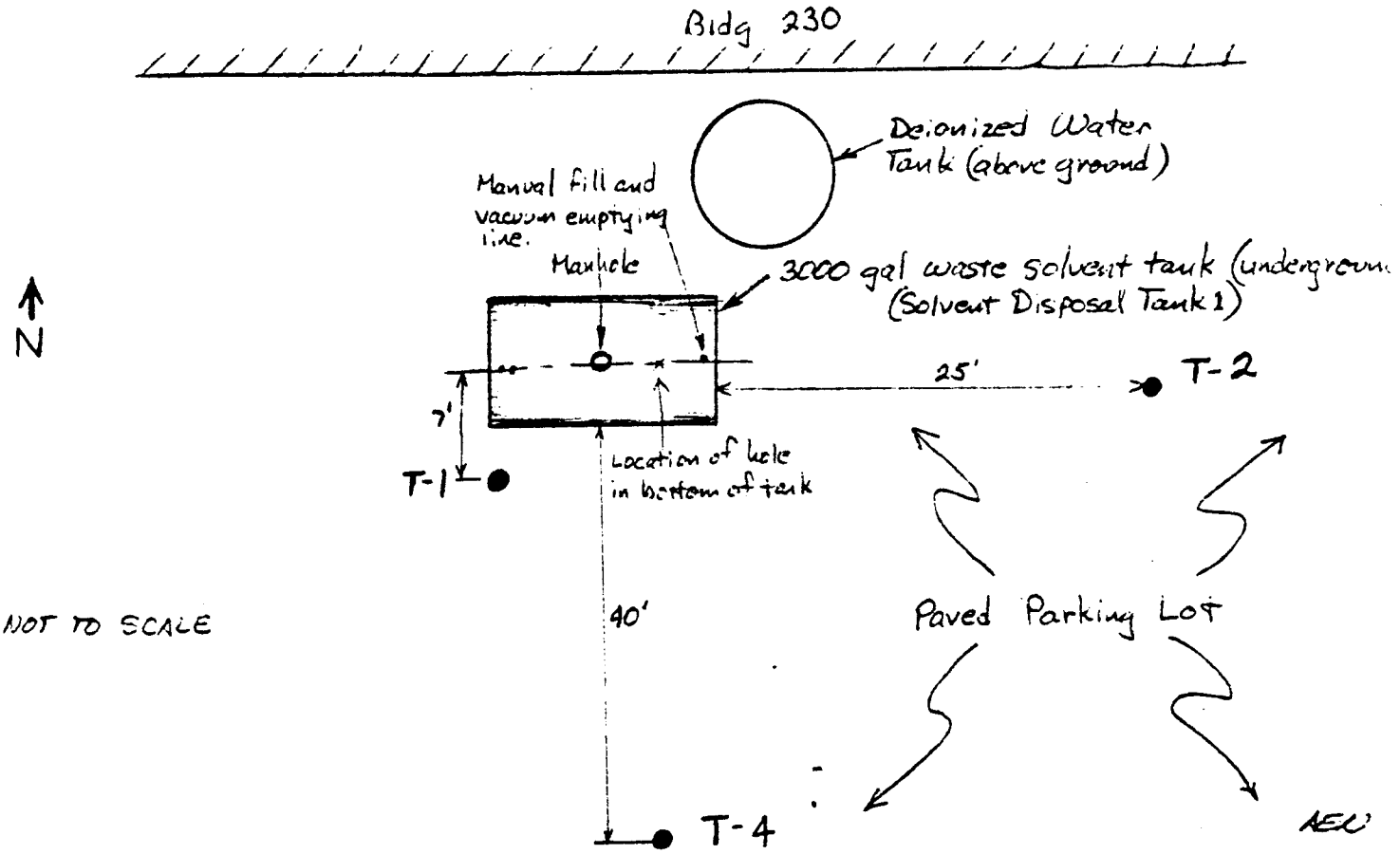
The lithologic log for test hole T-1 describes the material at the 26-32 ft level as sand/clayey sand that was very moist (the high organic results were from the 31 ft level) while just above this (25-26 ft) the ground was described as very moist to wet.

According to the December 1978 report issued by DWR on this groundwater basin (West Coast Basin) the water level elevation in the vicinity of the Hughes facility varies from ~~-10~~ 90 to ~~-20~~ 100 feet below ~~sea level~~ the surface in the spring to ~~-20~~ 100 to ~~-30~~ 110 feet below ~~sea level~~ the surface in the fall.

CONCLUSIONS: The test holes drilled by Hughes and the analyses which were performed indicate that there is a high concentration of organic material near the west end of Solvent Tank 1. The testing does not indicate the extent of the contamination however. Test ~~holes~~ T-3 and T-4 may not have been drilled to sufficient ~~depth to detect any organics which may have~~ vertically migrated laterally. No testing was done on ground water in the area which may lie fairly close to the surface in the vicinity of the tank. ~~should be done~~

RECOMMENDATION: Hughes needs to do further testing to assure that the material in the soil has not in fact already reached the groundwater and if it has steps must be taken to clean it up. If, through testing, it can be conclusively demonstrated that the organic material has not reached the groundwater already, Hughes needs to develop and implement a plan to assure the material would not and could not reach the underlying groundwater.

Plan View of Hughes Electron Dynamics 3100 W. Lomita



NOT TO SCALE

HUGHES

HUGHES AIRCRAFT COMPANY

AVOID VERBAL ORDERS

ENERGY RESOURCE CONSERVATION

COST IMPROVEMENT PROGRAM CIP

PERFORMANCE IMPROVEMENT

TO	SOURCE CODE	BLDG.	M/S	EXT.
PAUL MAHLOW	96|05	237	1101A	5032
FROM	**SOURCE CODE**	**BLDG.**	**M/S**	**EXT.**
HANK KLOS	96|10	230	T3J	6201

SUBJECT: SOIL SAMPLE OF PILES ON FWDS AROUND FORMER SOL. TK.

DATE: 8/15/83

PER OUR DISCUSSION TODAY ON THE ABOVE SUBJECT ALONG WITH YOUR COPY OF D.E. WEBB'S DWG #2, A NOTICE AND/OR SCHEDULE WILL BE ISSUED TO YOU FOR YOUR REQUIRED SAMPLING. WRITER WILL COORDINATED THIS WORK WITH THE CONTRACTOR TO MINIMIZE MATERIAL HANDLING AND EQUIPMENT MOVING. WILL INFORM YOU OF THE DETAILS AS THEY ARE FIRMED-UP.

THANK YOU

Hank Klos

SIGNATURE

CC: FRANK ENLOW
ROBERT HOBBS
FILE.

15 CS APR 79

11682 6/17 Truesdail

Solvent waste tank / Bldg 231

			%
6.	✓	Amylacetate	2.0
		Freon	1.1
2.	✓	Acetone	26.7
4.	✓	MeOH	10.0
3.	✓	Isopropanol	11.6
		Trichloroethane	0.8
		Chloroform	<0.1
1.	✓	Trichloroethylene	42.9
	✓	Tetrachloroethylene	2.8
		Toluene	0.4
		Xylene	1.7
		Benzene	0.1

	mg/l
Phenols	442
Pb	1.1
Cr	<1.0
Zn	24.0

Solvent Tank Contingency

Date	Action
6-1-83	Dave Hargis - Soil Samples taken, Tank 230, 231
6-3-83	B 230 Solvent tank Shut-down
6-13-83	B230 Solvent tank de-contamination : J.C. Inc. Soil Sample taken Tank - 230 : Dave Hargis
6-17-83	B231 Solvent tank Shut-down
6-24-83	B 231 Solvent tank Removed
7-1-83	B 230 Solvent tank Removed EXCAVATION BEGAN 6-30-83

draft 7/1/83

NOTICE TO STATE

not used - OBRIEN WOULD NOTIFY (MTG FRI PM @ C-2) HOOVER'S OFFC
ASCEDERO / WONG

UPDATE ON PROGRAM
NEW TANK IN
VAULT CONCRETE WALLS AND FLOOR
FORCED AIR VENTILATION
VAPOR SENSOR IN VAULT
EXPLOSION PROOF LIGHTING
TANK LEVEL (VOLUME) SENSOR
FLOOR OF VAULT DESIGNED WITH SUMP THAT
ANY MOISTURE / LIQUID WILL GO TO LOW POINT
AND BE PUMPED INTO TANK

PLUMBING CONNECTED / READY FOR OPERATION
NOT IN OPERATION

OLD TANKS
B 231 SOLVENT TANK (550 gal cap)
SHUT DOWN
DRAINED, WASTE DISPOSED
SOIL SAMPLE CLEAR (PRIOR TO EXCAVATION)
TANK EXTRACTED
STATIC WATER LEAK CHECK : NO LEAKS
TANK RETAINED (FOR REVIEW)

B 230 SOLVENT TANK (3000 [revised] cap)
SHUT DOWN
DRAINED DECONTAMINATED
INTERNALLY TANK LOOKED SOUND
SOIL SAMPLE (REFLECTED POSSIBLE CONTAM-
FURTHER STUDIES)
WATER TABLE @ DEPTH 300' : NO CONTAM
" " " SURFACE : SOME CONTAM
BUT NOT CONSISTENT W/ SOIL SAMPLE

SOLVENT TANK UPDATE 7-6-83

7-1-83 DoHS (PKO → N.A.) NOTIFIED AS TO PROGRESS OF B 232 PROJECT. SOLVENT TANKS REMOVED AND AVAILABLE IF DEPT WANTED TO LOOK. DoHS INFORMED A SMALL HOLE IDENTIFIED IN WATER LEAK TEST, AFTER INTERNAL & EXTERNAL VISUAL CHECK.
(large tank removed on 2 day proj: 6-30/7-1)
DoHS SAID THEY WOULD COME AND LOOK 7-5-83 @ 3:00.

7-5-83 DoHS CALLED (D. WONG) WITH ADDITIONAL INQUIRIES ABOUT TANK. THERE WAS A REFERENCE TO SOIL SAMPLES AND I (PM) DID COMMIT TO PROVIDING INFORMATION THOUGH THE SPECIFICS AND FORM WERE NOT DEFINED. THE GENERAL INFORMATION RELATED TO THE WATER CHECK OF THE TANK ONCE OUT OF THE GROUND.
I INDICATED NESTOR (N.A.) WAS COMING IN THE AFTERNOON AND WOULD BE ABLE TO REVIEW THE PROJECT AND THE TANKS.

DoHS CALLED BACK INDICATING N.A. WOULD NOT BE COMING TO EDD IN P.M. AND THAT THE WATER CONTROL BOARD HAD BEEN NOTIFIED.

L&W CONDUCTED A DEBRIEFING AT EDD PLUS PREPARING FOR THE DoHS VISIT AS PRESCHEDULED. DoHS CANCELLED O'BRIEN, DANNER, WYMAN, MAHLOW.
WATER CONTROL BOARD CALLED TO SET UP A VISIT IN THE AFTERNOON (1:30). INTEREST IN STATE'S KNOWLEDGE OF GROUND WATER RAISED

7-5-83 WATER CONTROL BD VIEWED TANKS.
AL NOVAK DAVE BACHAROWSKI
INQUIRIES COLLECTED AND WOULD BE RESPONDED TO: ATTACHED.

7-6-83 A. NOVAK CALLED WITH ADDITIONAL INQUIRIES AND THEY WERE RECORDED. NOVAK WAS REMINDED THAT PKO WOULD BE HANDLING INQUIRIES.

NOTICE TO STATE (CONT'D)

EXTERNAL INSPECTION: NO LEAK. SPOTS SOIL CAKING STAIN DETERIORATED SURF

H_2O STAT CHECK: ONE SMALL LEAK, 3/16" DIAM

EXCAVATION PIT: NO SLUDGE, NO STAINS

TANK RETAINED

CONSULTANT PREPARING REPORT OF FINDINGS
SOIL & WATER SAMPLE

INCLUDES RECOMMENDATIONS FOR CORRECTIVE ACTION

HYPOTHESIS / THEORY

- EARLY IN LIFE OF TANK SOME OVER FLOW @ FILL/DRAIN PORT CAUSED CONTAM RARE, ISOLATED HISTORIC EVENT

SUPPORTED BY TANK EXTERNAL OBSERVATION - STAIN NOTED AT FILL PORT DOWNWARD, NO LEAK NOTED @ THAT END OF TANK IN WATER TEST.

COME OUT TO LOOK @ TANKS

NARRATIVE ON TANK REMOVAL - WASTE SOLVENT TANK - BLDG. 230

June 30, 1983 - excavation began on the removal of the waste solvent tank by IT Transportation, a certified hazardous waste hauler and a sub-contractor hired by IT. Chuck Dickens of Hargis and Montgomery arrived at approximately 9:30 a.m. The excavation began approximately 9:00 a.m.

The black top and soil were carefully removed over the surface of the tank so that the dimensions of the tank could be clearly defined and any other pipe or plumbing connection identified without damage. During that excavation process, an abandoned underground conduit was identified and the plumbing line to the tank was identified and removed. The plumbing line to the waste solvent tank was of PVC and in good condition. It was not deteriorated. After the dimensions of the tank were defined in the excavation process, boring was done to install shoring for tank removal. During the process of boring, a bit on the excavation equipment was broken.

On day 2 (July 1) the installation of the shoring was completed and the tank excavation complete. The waste solvent tank was removed at approximately 1:30 p.m. The tank was withdrawn from the excavation and quickly examined as well as the excavation site itself. No stains or pools of fluid, mud, was identified in the pit. No accumulations of mud or soil were identified on the external surface of the tank. The tank was relocated to a location approximately 150 yards southeast of the excavation site. During the initial phase of the relocation of the tank, one end of the tank was dragged on the black top about 10-15 feet. The contractor was instructed to raise the tank during the remainder of the relocation. It was noted that by dragging the tank, the external wrapping on the tank, a heavy fabric or paper-like product inpregnated with tar, was loosened and stripped from the tank on the part that was dragged. The remainder of the movement was accomplished without incident, without incident, without further dragging of the tank along the surface.

Soil from the excavation was placed around the tank to provide security during the hydrostatic leak test. C. Dickens from Hargis and Montgomery observed the condition of the soil, general condition of the tank and the excavation pit itself.

There were no stains, locations, of mud, pools of standing fluid in the soil, or in the pit. A leak test on the tank was performed. During the filling process, it was noted that fluid began to bead and drip in the location where the tank surface was dragged along the black top.

An investigation of the tank, the fill hose became unsecure and water flowed on the ground around the tank making further observations extremely difficult. In an effort to absorb this water with dirt from around the tank, the contractor struck the tank with a shovel inadvertently. The water was absorbed with soil and the filling process of the tank resumed. The tank was filled to approximately 1/2 to 3/4 full with water. Moisture was noted at the base of the tank and the site was further investigated after the tank was emptied of water. The water from this process was manifested and disposed of as contaminated waste.

Narrative on Tank Removal

The tank was rolled to examine the base of the tank to determine if a leak existed or the moisture under the tank was from the fill incident. Stripping the wrap/tar fabric, a small hole (approx. 3/16") was identified about the mid length of the tank along the bottom surface.

The excavation was filled with p-gravel and efforts to remove the shoring were begun but not completed.

On day 3 (July 5) removal of the shoring was completed after an extended work day. Back fill, compaction were completed.

C. Dickens of Hargis and Montgomery was present for all steps with the exception of shoring removal. Photos were taken during the procedure.

PFM/jt

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
107 SOUTH BROADWAY, ROOM 7011
LOS ANGELES, CA 90012
(213) 620-2380

OP
NOD

May 9, 1986

Mr. P.K. O'Brien
Hughes Aircraft Company
3100 W. Lomita Boulevard
Torrance, CA 90509

Dear Mr. O'Brien:

OPERATION PLAN REVIEW (CAD041666819)

We received the Operation Plan (OP) for your facility on November 26, 1985 and have evaluated this document according to guidelines set forth in "Instruction for Preparing an Operation Plan (March 1985)". As a result of this evaluation, sections of the OP were found to be incomplete. Additional information to complete these sections must be submitted within 15 days of receipt of this certified letter. Failure to submit a complete OP by this date may result in the denial of your application for a Hazardous Waste Facility Permit. Without a permit, your facility will no longer be allowed to store or treat hazardous wastes.

The enclosed comments identify the information needed to complete the OP. Each comment is preceded by the applicable OP instructions manual number for ease of reference.

Your response should be incorporated into the OP and the OP resubmitted to my attention at the letterhead address.

If you have any questions, please contact Michael Iskarous of my staff.

Sincerely,

for Carmelita E. Lampino
John A. Hinton, P.E., Chief
Facility Permitting Unit
Southern California Section
Toxic Substances Control Division

JAH(MI)mf

Enclosure

cc: John Masterman
Site Cleanup and Emergency
Response Section - TSCD
714 "P" Street
Sacramento, CA 95814

Certified Mail
P 708 717 261
R R R

NOTICE OF DEFICIENCY
FOR

HUGHES AIRCRAFT COMPANY
Electron Dynamics Division and
Microwave Products Division
CAD 041666819

I. Identification

F. Provide the date of DHS instructions used to prepare plan.

G-H Submit another certification signed by both the owner and operator of the facility. This must bear the date , printed names, and original signatures.

II. Maps and Associated Information

B.1.a.(1-2) e.8. Submit another map using the required scale 1 inch $\leqq$ 200 feet showing the surroundings extending 2000 feet beyond the perimeter of the facility, and the existing contours and elevations. Also, identify the location of each facility used for hazardous waste storage and/or treatment.

B.2.e. Provide the specific - reference showing the prevailing wind speed and direction at the facility.

III. Geology

C. Provide data which indicates the depth to ground water within the immediate vicinity of the facility (available from the Regional Water Quality Control Board or the State Department of Water Resources).

IV. 100 Year Floodplain Information

A. The referred attachment do not show whether or not the facility is located within a 100-year floodplain. Document whether facility lies in that floodplain, and include source of data (Federal Insurance Administration Map or equivalent maps and calculations).

V. Characteristics of Hazardous Wastes Handled

A.2. Identify California Waste Code from DHS 8022A Uniform Hazardous Waste Manifest for each hazardous waste handled at the facility.

C. Provide a copy of the waste analysis plan that describes the methodologies for conducting the analyses required to properly treat or store hazardous wastes.

VI. Waste Management Devices

A.2.a. Describe the containment system showing at least the basic design parameters, dimensions, and construction materials.

A.2.b. Describe how design of the containment system promotes drainage or prevents contacts between containers and standing liquids.

A.2.c. Provide the calculations to show that the required containment capacity is met.

A.2.e. Describe how accumulated liquids can be analyzed and removed in time to prevent overflow of the system.

VIII. Operational Procedures

C.2.d. Describe the operational procedures used to ensure that waste analyses and trial tests are conducted whenever a different treatment process is used or a different waste is treated or stored in a tank.

D.1. Provide a copy of the inspection checklist and the schedule for the inspection of the monitoring, safety, emergency response, security devices, structural and operating equipment. The checklist must include the types of problems to be inspected for and the frequency of inspection.

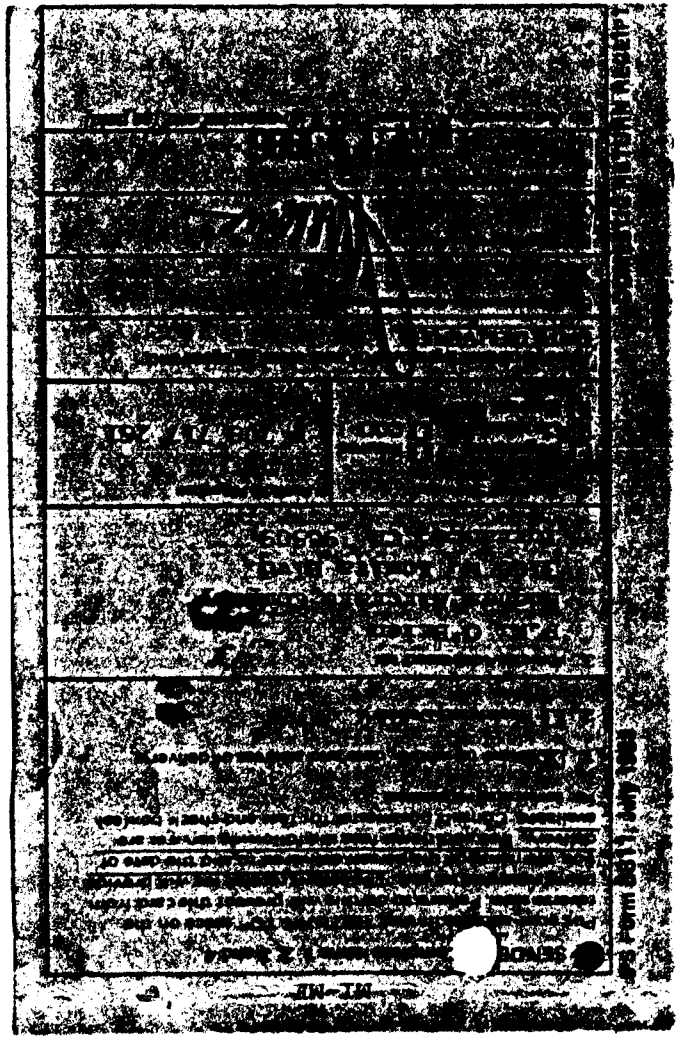
XIII. Closure Plan

A. B. C. D. Address all these items in the closure plan. See OP Instructions for details.

General Comments

The operation plan must be re-written in a way that it can be understood also by anyone who does not have a copy of and is not familiar with the "OP Instructions".

/mf



P 708 717 261

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

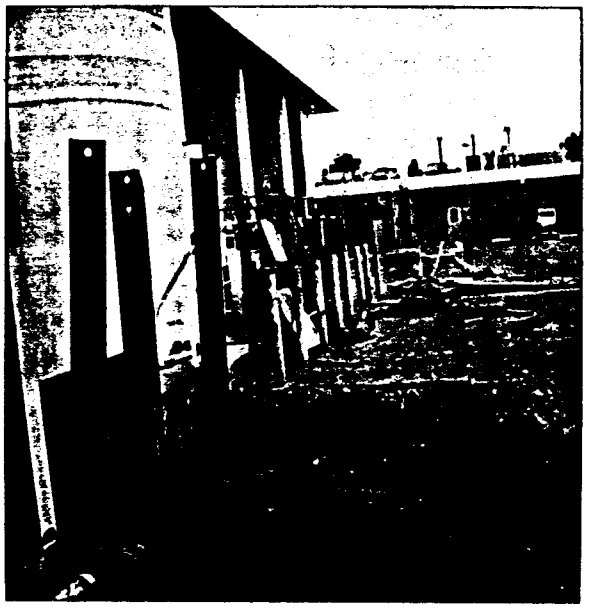
Sent to P.K. O'Brien	
Street and No. Hughes Aircraft Company 3100 W. Lomita Blvd.	
P.O., State and ZIP Code Torrance, CA 90509	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1983-403-517

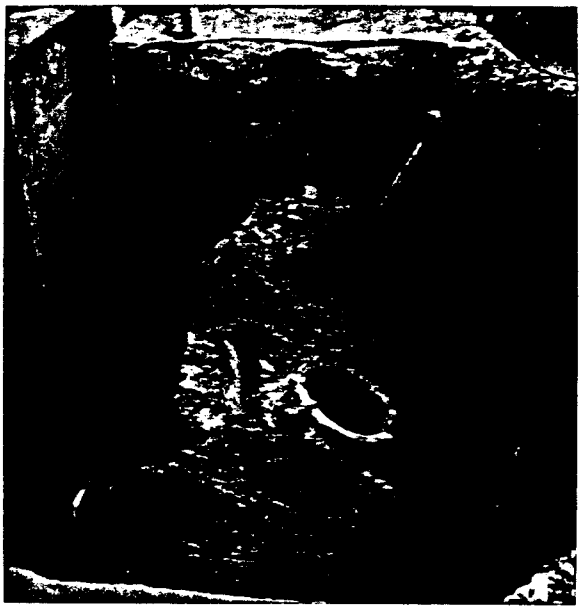
REMOVAL OF SOLVENT TANK 6-27-83

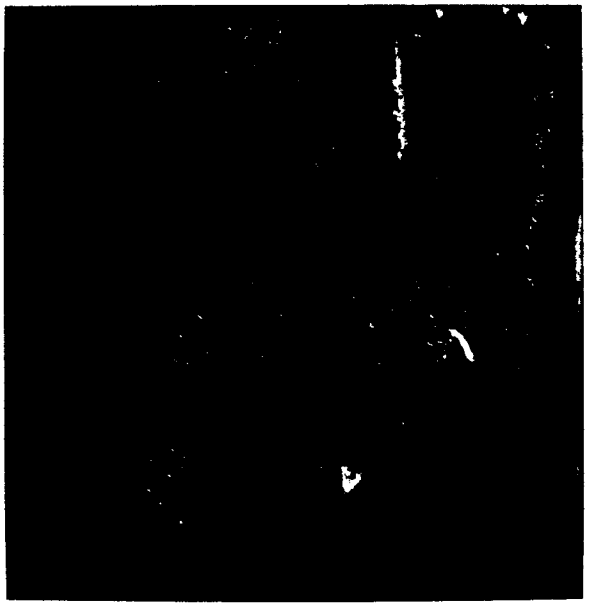
Removal B230 Solvent tank 7-1-83

6-30-83

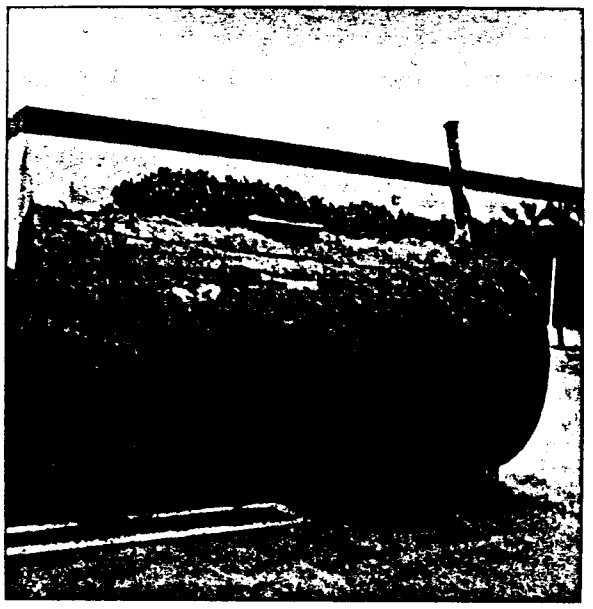


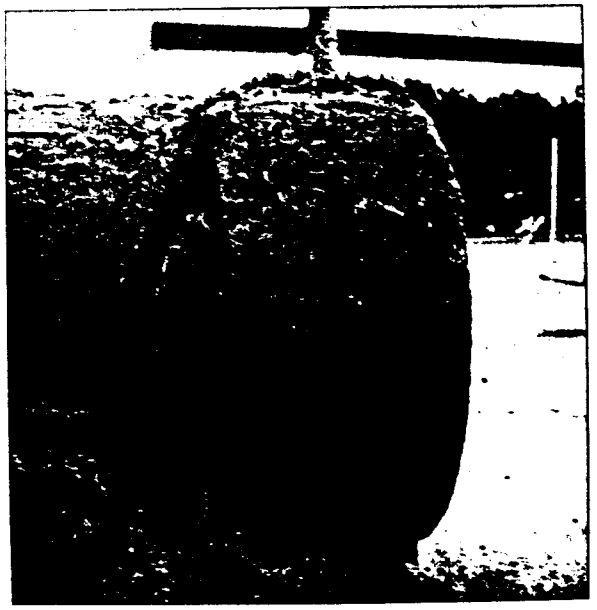
6-30-

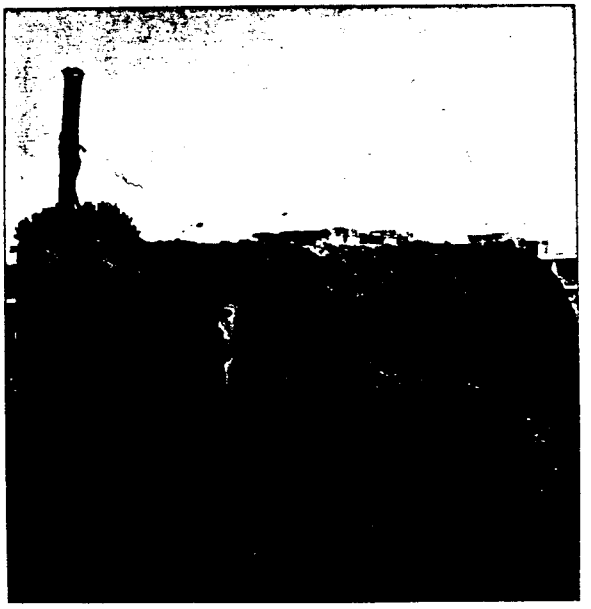




Removal B230 Solvent tank 7-1-83







LONG VIEW: SOLVENT TANK & SOIL, 8-4-83 (LOOKING S-E TOWARDS TANK)

①

② VIEW OF LOCATION OF SOIL SAMPLE HOLE #1, 8/4/83 (PIPE W/ YELLOW MARKER) 3 SAMPLES: 1', 2½', 3½' - 8/2/83

③ VIEW OF SAMPLE HOLES #2, #3. TAKEN 8/4/83, MARKED W/ YELLOW RIBBON IS ADJACENT HOLE #2, THE SHORTER VERTICLE ROD IS ADJACENT HOLE #3

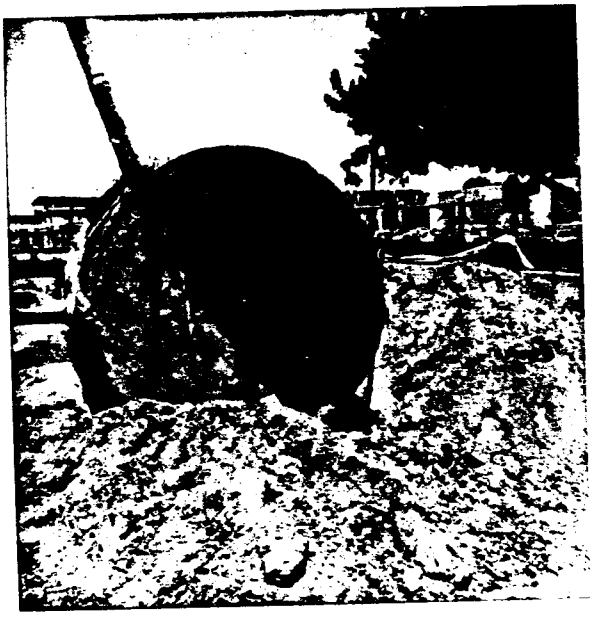
8/4/83

④ VIEW (NO-N-W) OF SAMPLE HOLE #4. 1 SAMPLE, 1 FT DEEP.

8/4/83

(5) VIEW TO N.W. OF SAMPLE HOLE #5. SOIL APPROX 3' IN HEIGHT SAMPLE 1' IN DEPTH. SPOTS ON END OF TANK ARE FILM FLAW, NOT TANK

8/4/83



(6) VIEW TO NO OF SAMPLE HOLE #6 AND END OF TANK NOTE NO SPOTS ON END OF TANK AS PHOTO #5.

NAME Dave Wong

Firm/Agency State DOHS - HMMS

Address L.A.

Phone No. (213) 620 - 2380

Date Spill Occurred Unknown

Time Spill Occurred

Agency Jurisdiction Bd 4 & HMMS

Agencies Notified

___ OIL SPILL B II b

___ CHEM. SPILL B VI a-- 62

___ SEWAGE SPILL B II t

X OTHER Waste Solvent U.g. Tank leak.

MAP REFERENCE 68-B6

Date Notified 7/5/83

Time Notified 0900

Received by WORKMAN

Assigned to Nonak & Bacharowski

DETAILS: Hughes Aircraft 3100 W. Lomita Bl, Torr

The Company removed last week, two underground waste solvent tanks (3,000 and 500-gallon capacity). After removing the tanks from the ground, they discovered that one tank leaked. Company rep. spectulate that the tank was damaged when it was removed from the ground. Soil samples have been taken. Results aren't available yet.

Contact Paul Mahlow ((213) 517-5032) Hughes

(Use new sheet if more space needed)

Action Necessary Inspect tanks, & Investigate.

Action Taken

7/5/83

Action completed by

_____ on _____
(Name) (Date)

Noted: Initials RS

Form C-11 (Revised 7/17/80)

State Police (213) 620-4700
EPA (415) 974-8131
HMMS (213) 620-2380

COMPLAINANT NOTIFIED OF FINDINGS & ACTION BY

_____ on _____
(Name) (Date)

OES (800) 852-7550
LACFCD (213) 226-4386
DFG (213) 590-5132
USCG, LA (213) 590-2341
USCG, VEN (805) 962-7430