California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

October 31, 2005

Mr. Steve Granade, Environmental Engineer
Naval Base Ventura County
Environmental Division, Code N45V
311 Main Road, Suite #1
Point Mugu, CA 93042-5000

MONITORING MODIFICATION FOR LACTATE AND SOY OIL INJECTION PILOT TEST TO EVALUATE ENHANCED NATURAL ATTENUATION OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER, GENERAL WASTE DISCHARGE REQUIREMENTS (ORDER NO. R4-2005-0030, SERIES NO. 026, CI NO. 8954) – INSTALLATION RESTORATION PROGRAM SITE 6 (BUILDING 311 YARD), 311 11TH STREET, NAVAL BASE VENTURA COUNTY, POINT MUGU, CALIFORNIA (SLIC NO. 282)

Dear Mr. Granade:

Los Angeles Regional Water Quality Control Board (Regional Board) staff have reviewed the October 13, 2005 request from your consultant, T N & Associates, requesting a change to the monitoring requirements under Waste Discharge Requirements (WDR) Order No. R4-2005-0030, Series No. 026, Monitoring and Reporting Program (MRP) CI-8954. The request notes that the downgradient monitoring points (MW-19A and MW-19B) are at least 100 feet from the injection area, and will not, because of slow groundwater flow, be influenced by injected material within the first week of the study. You further indicate that you do not expect observable contaminant concentration changes within 1-week intervals.

The following modified sampling requirements apply to all wells and will provide sufficient data for the Regional Board to monitor the effects of the injection on groundwater quality.

Monitoring Frequency in Original MRP	Modified Monitoring Frequency
• Prior to injection, for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).	• Prior to injection, for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).
• 1 week after injection, for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).	• 1 and 4 weeks after injection, injection area wells (MW-1, MW-2, MW-3, and MW-4).
• Weekly for 2nd and 3rd weeks, for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).	• 2 and 4 weeks after injection, up and down gradient wells (MW6-01R, and MW-19A and MW-19B).

• Monthly for the next 2 months, for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B). • Every 3 months thereafter, wells in injection area, up gradient and down gradient (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).	• After 4 weeks the monitoring frequencies in the original MRP for the post 3-week period apply for wells in the injection area, and up gradient and down gradient of the injection area (MW-1, MW-2, MW-3, and MW-4, and MW6-01R, and MW-19A and MW-19B).

All reporting requirements of WDR Order No. R4-2005-0030, Series No. 026, MRP CI-8954 remain. When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to these WDR, Series and CI numbers. This will assure that the reports are directed to the appropriate file and staff. Because of Regional Board data management requirements please do not combine your discharge monitoring reports with other reports. Submit each type of report as a separate document.

Please contact Peter Raftery at (213) 576-6724 if you have any questions.

Sincerely,

Jonathan Bishop
Executive Officer

cc: Peter Chen, Department of Toxic Substances Control, Cypress
Christine Bucklin, Department of Toxic Substances Control, Glendale
Michael Lauffer, State Water Resources Control Board, Office of Chief Counsel
Tim Garvey, TN & A, Ventura
Kurt Souza, State Department of Health Services, Drinking Water Field Operations Branch, Carpinteria
Jessie Altstatt, Santa Barbara Channel Keeper
Barbara Carey, California Coastal Commission, South Central Coast Office Vicki Clark, Environmental Defense Center
Allison Detmer, California Coastal Commission, Energy and Ocean Resources Division
Mary Meyer, California Department of Fish & Game
Heal the Bay
Port Hueneme Water Agency
Doug Beach, Ventura County Environmental Health
Glen Luscomb, Ventura County Public Works

STATE OF CALIFORNIA
CALIFOR[illegible]A REGIONAL WATER QUALITY CON[illegible]OL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI-8954
UNITED STATES NAVY, NAVAL BASE VENTURA COUNTY
INSTALLATION RESTORATION SITE 6 (BUILDING 311 YARD), 311 11th STREET
POINT MUGU, CALIFORNIA

ORDER NO. R4-2005-0030 (SERIES NO. 026)
(FILE NO. 98-017)

I. Discharge Monitoring

For this Monitoring and Reporting Program the Discharger shall sample from one monitoring well (MW6-01R), upgradient of the injection areas, two monitoring wells down gradient of the injection areas (MW-19A and MW-19B), and three wells within the injection areas (MW-1, MW-2, and MW-3). Maps of the area and site are provided as Figures 1 through 6. Monitoring of the results of injection shall consist of sampling and analyzing groundwater samples from these groundwater-monitoring wells. Groundwater shall be monitored for the duration of the evaluation in accordance with the following discharge monitoring program:

Seven wells will be used to collect groundwater samples for analyses to monitor the migration of injected materials (MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A and MW-19B, Figure 3. Nineteen wells will be used to monitor the groundwater gradient (MW-1, MW-2, MW-3, MW-4, MW6-01R, MW6-05A, MW6-05B, MW6-05C, MW6-07A, MW6-07B, MW6-07C, MW6-09A, MW6-09B, MW6-09C, MW6-011A, MW6-011B, MW6-011C, MW-19A and MW-19B, Figure 3).

Groundwater

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Total daily injection waste flow	Liters/day, or other units as appropriate	Not Applicable	Daily during injection
Volatile organic compounds	µ/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Cations (barium, calcium, magnesium, manganese, potassium and sodium)	mg/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Anions (bromide, iodide, chloride, sulfate, nitrate, nitrite, O-phosphate, and sulfide) (EPA 300)	mg/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks

			• Monthly for the next 2 months • Every 3 months thereafter
Total dissolved solids and total suspended solids	mg/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Redox Potential	millivolts	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Dissolved Oxygen	mg/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Methane, Ethene, Ethane, Carbon Dioxide	µg/l	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
pH	pH units	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter
Temperature	^{0}F/^{0}C	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW-19A, and MW-19B.	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter

Groundwater Elevation	Feet below ground surface, and feet above (or below) mean sea level	Grab, from wells MW-1, MW-2, MW-3, MW-4, MW6-01R, MW6-05A, MW6-05B, MW6-05C, MW6-07A, MW6-07B, MW6-07C, MW6-09A, MW6-09B, MW6-09C, MW6-011A, MW6-011B, MW6-011C, MW-19A and MW-19B	• Prior to injection • 1 week after injection • Weekly for 2nd and 3rd weeks • Monthly for the next 2 months • Every 3 months thereafter

II. Reporting and Laboratory Analyses

A. REPORTING REQUIREMENTS

1. In accordance with Section 13267 of the California Water Code, the Discharger shall furnish, under penalty of perjury, technical monitoring report to the Regional Board during the evaluation and any post-test monitoring period. Such reports shall be submitted in accordance with specifications prepared by the Executive Officer.

2. The monitoring reports shall be submitted quarterly by the 15th of the following month, with the first report due April 15, 2005. Subsequent quarterly reports shall be received at the Regional Board according to the following schedule:

Monitoring Period	Report Due
January – March	April 15
April – June	July 15
July – September	October 15
October – December	January 15
Annual Summary Report	March 1 of each year

3. If there is no discharge or injection, during any reporting period, the report shall so state. Monitoring reports must be addressed to the Regional Board, Attention: Information Technology Unit.

4. All monitoring reports shall include discharge limitations in the Order (Waste Discharge Requirements and Discharge Prohibitions), tabulated analytical data, the chain of custody, laboratory report (including but not limited to date and time of sampling, date of analyses, method of analysis and detection limits). If there is no discharge, the report shall so state it.

5. Within six (6) months following the end of the evaluation the Discharger shall submit a final summary report to the Regional Board to report the findings.

The report shall contain both tabular and graphical summaries of the monitoring data obtained prior to and proceeding the pilot test. In addition, US Naval Base Ventura County, Port Hueneme shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the site's waste discharge requirements, if any.

B. CERTIFICATION STATEMENT

Each report shall contain the following completed declaration:

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

Executed on the _____day of _____

at _____

_____(Signature)

_____(Title)"

C. LABORATORY ANALYSIS REQUIREMENTS

1. All chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer.

2. Samples shall be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All quality assurance/quality control (QA/QC) items should be run on the same dates when samples were actually analyzed and documentation shall accompany the laboratory reports.

3. The detection limits employed for sample analyses shall be lower than the permit limits established for a given parameter, unless the discharger can demonstrates that a particular detection limit is not attainable and obtains approval for a higher detection limit from the Executive Officer.

III. Notification

1. The Discharger shall inform this Regional Board 24 hours before the start of the discharge.

2. The Discharger shall inform this Regional Board within 24 hours in the event that any discharge exceeds the discharge limit. Written confirmation shall follow within one week and shall include date and time, estimated volume and/or concentration, duration, cause, and all corrective actions taken.

3. The Discharger shall inform this Regional Board of the termination of the evaluation project.

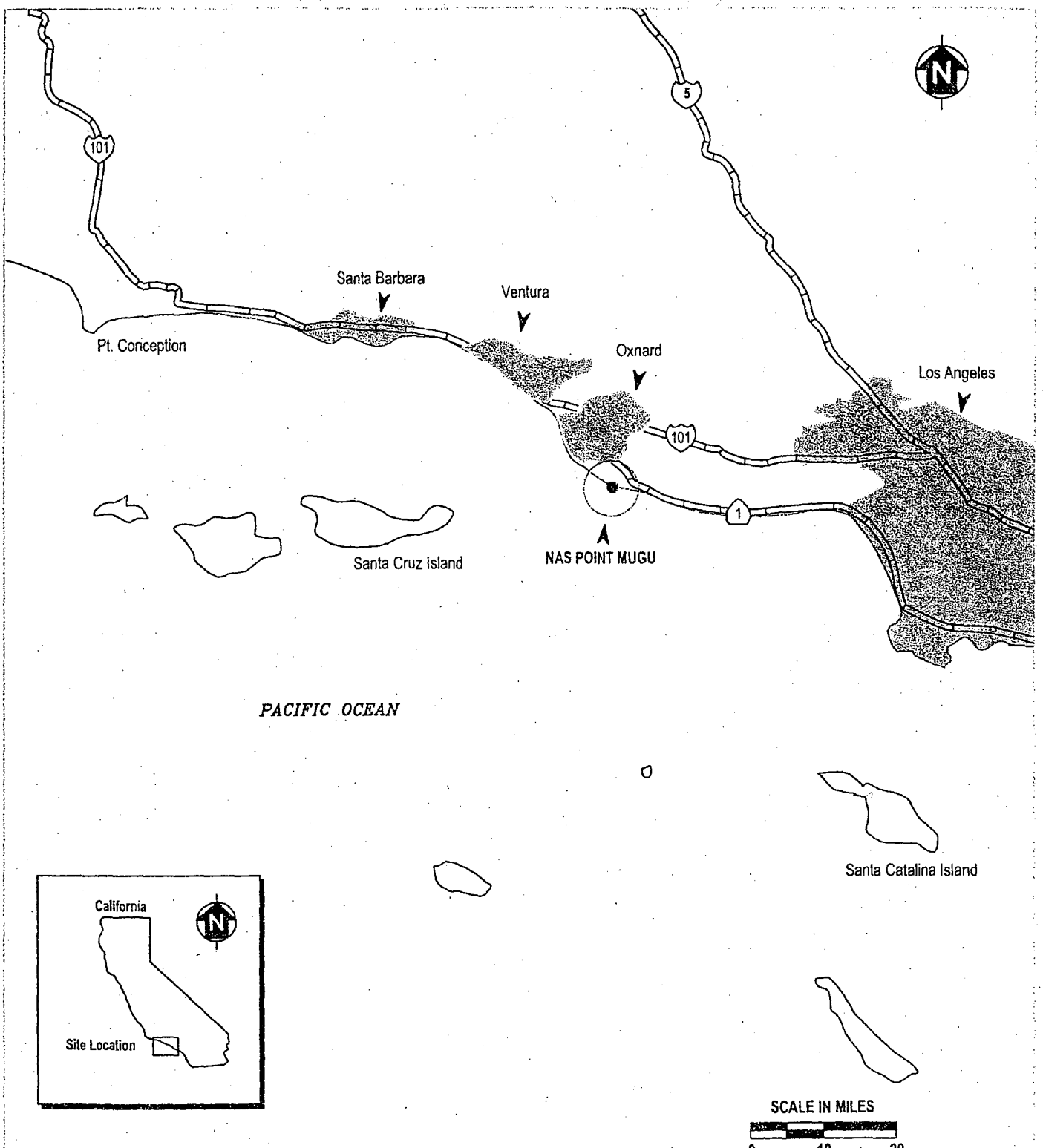
IV. Monitoring Frequency

1. Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted to a less frequent basis or parameters and locations dropped by the Executive Officer if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

2. All records and reports submitted in compliance with this Order are public documents and will be made available for inspection during business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region, upon request by interested parties. Only proprietary information, and only at the request of the Discharger, will be treated as confidential.

Ordered by for David A. Bachowski, AEO
Jonathan Bishop
Executive Officer

Date: October 5, 2005



LEGEND

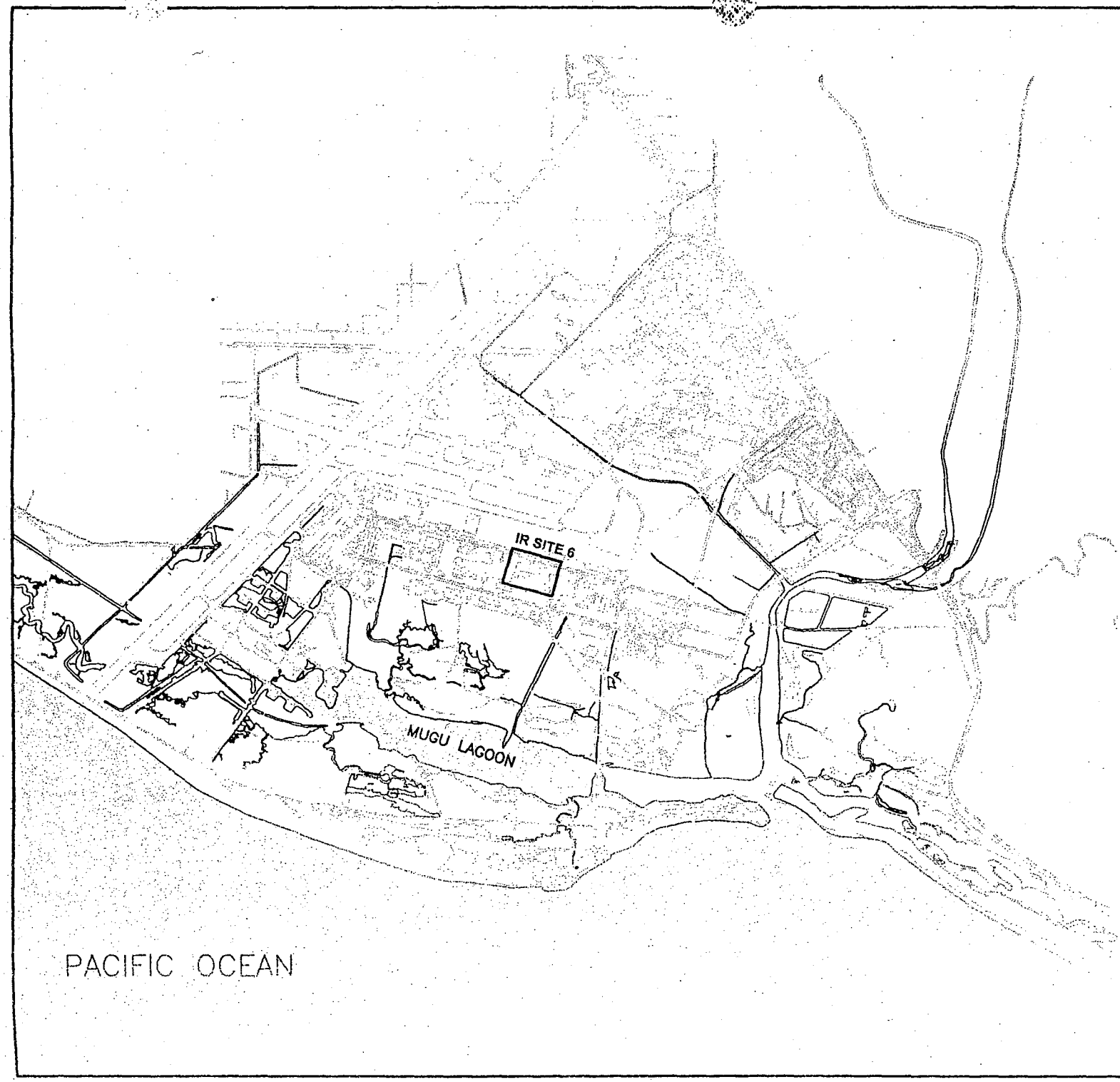
SHADED AREA REPRESENTS MAJOR POPULATION CENTERS OF SANTA BARBARA, VENTURA, OXNARD, AND LOS ANGELES

FIGURE 1

LOCATION MAP OF NAVAL AIR STATION NAVAL BASE VENTURA COUNTY POINT MUGU, CALIFORNIA

T N & Associates, Inc.
Engineering and Science

Date: 2/20/2005



LEGEND

- INSTALLATION RESTORATION SITE 24
- ROAD
- DIRT ROAD
- STRUCTURES, BUILDINGS
- WATER

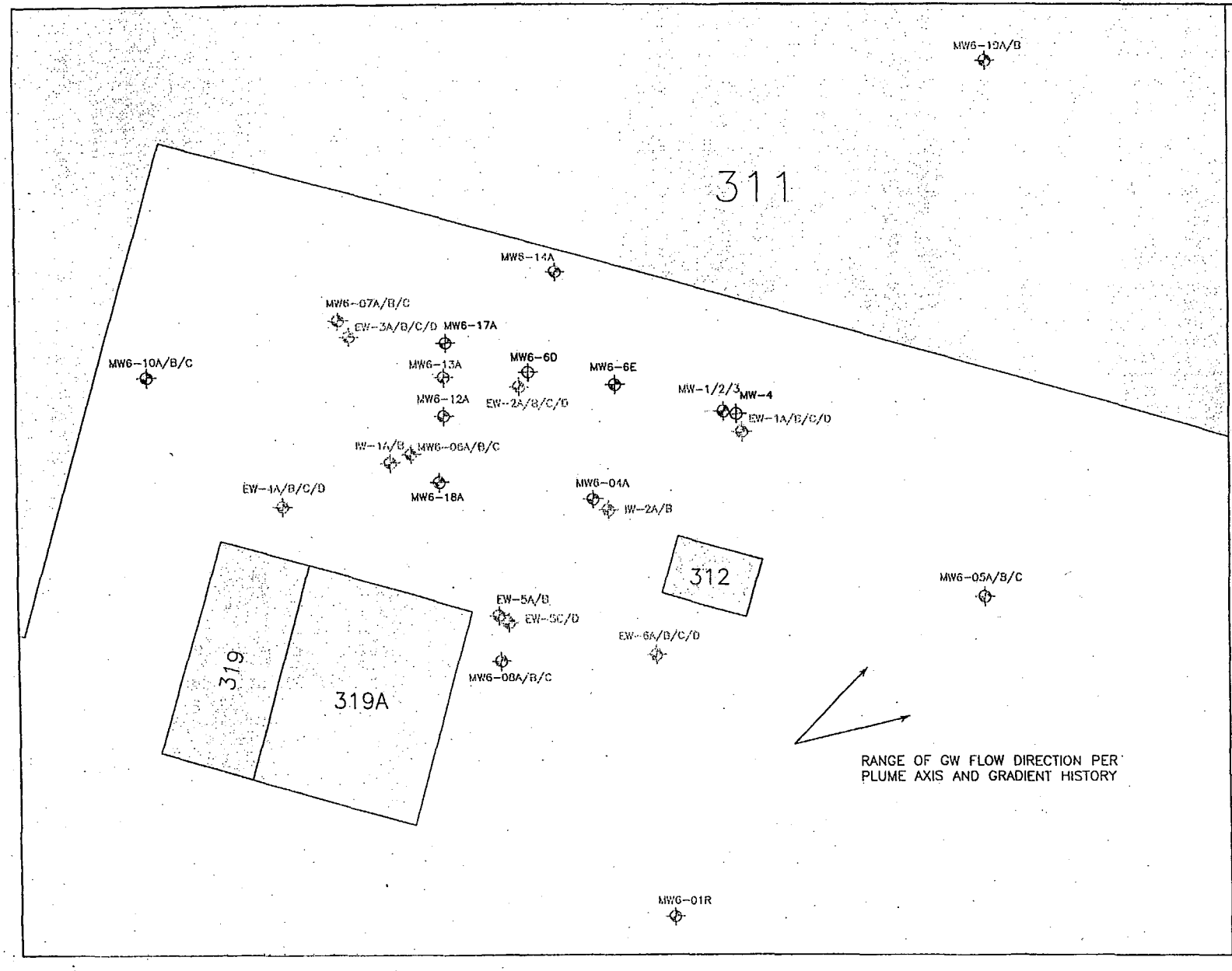
DATE:	PREPARED FOR:
3/25/05	U.S. NAVY SOUTHWEST DIVISION, SAN DIEGO, CA

IR SITE 6 LOCATION

NAS POINT MUGU, CALIFORNIA
U.S. NAVY SOUTHWEST DIVISION, SAN DIEGO, CA

T N & Associates, Inc.
Engineering and Science

FIGURE 2



LEGEND

- MW6-08A/B/C — ANNUAL GROUNDWATER MONITORING WELLS (NESTED; ZONES A, B, & C)
- MW6-07A/B/C — INJECTION, REMEDIAL PROGRESS AND ANNUAL MONITORING WELLS (NESTED; ZONES A, B, & C)
- IW-2A/B — INJECTION WELLS (NESTED; ZONES A&B)
- EW-6A/B/C/D — EXTRACTION WELLS (NESTED; ZONES A, B, C & D)
- MW6-17A — EXISTING MONITORIG WELLS

NOTES:

1. THE FOLLOWING SAMPLING EVENTS ARE ANTICIPATED:
   - INJECTION MONITORING,
   - REMEDIAL PROGRESS MONITORING (MONTH #1, MONTH #3, MONTH #6, AND MONTH #9), AND
   - ANNUAL SAMPLING.
2. GROUNDWATER MONITORING INCLUDES FIELD MEASUREMENTS OF DISSOLVED OXYGEN, OXIDATION-REDUCTION POTENTIAL, AND pH, AND OFF-SITE LABORATORY ANALYSES OF VOLATILE ORGANIC COMPOUNDS (SW 846 8260B), DISSOVLED GASES (RSK 175), CHLORIDE AND SULFATE (EPA 300.0), AND VOLATILE FATTY ACIDS (DAI-GC/FID).

0 25 50

APPROXIMATE SCALE IN FEET

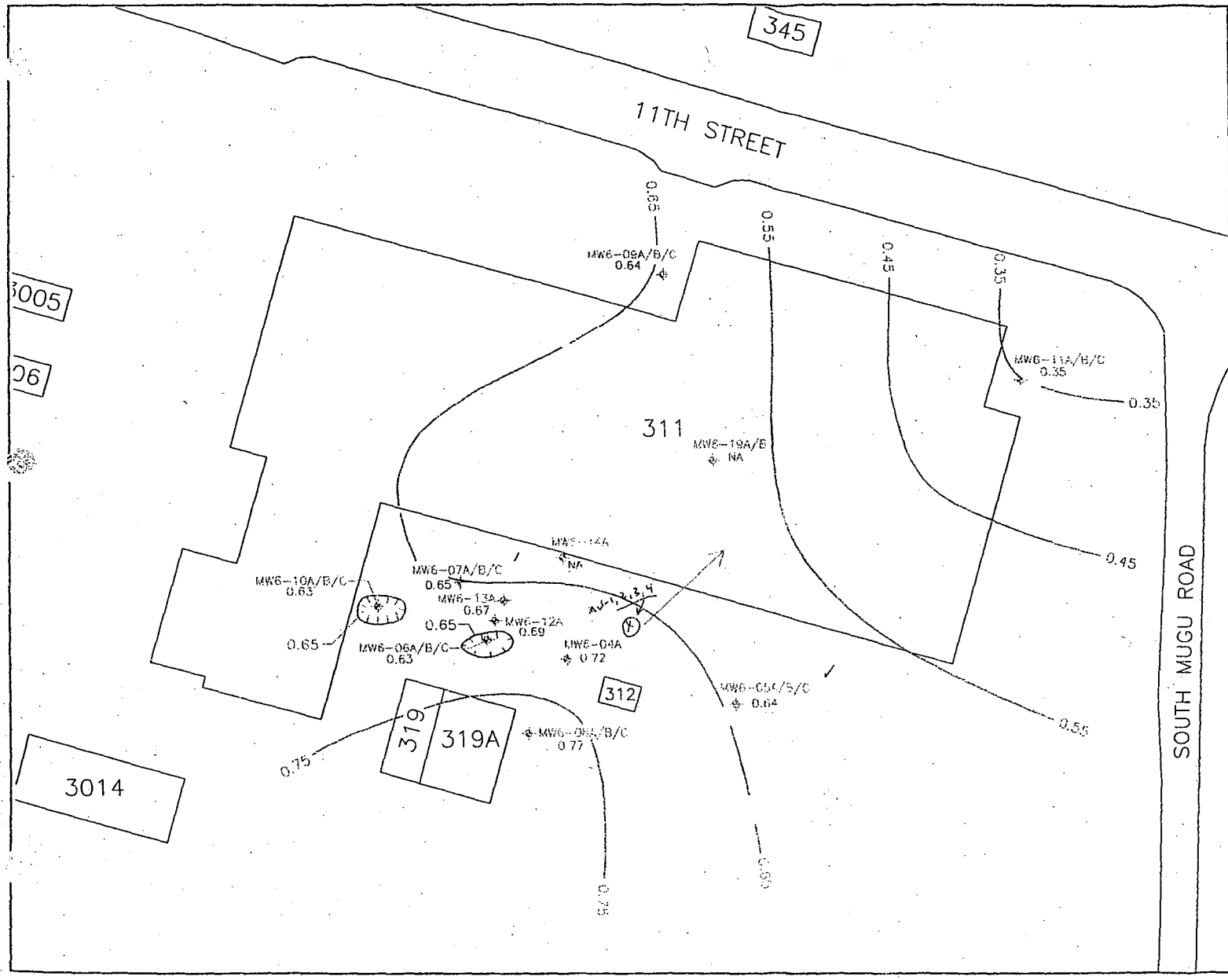
DATE:	PREPARED FOR
3/18/2005	U.S. NAVY SOUTHWEST DIVISION, SAN DIEGO, CA

EISB PILOT TEST PROGRESS MONITORING WELL LOCATIONS

IR SITE 6 (BUILDING 311 YARD)
NAVAL AIR STATION POINT MUGU, CA

T N & Associates, Inc.
Engineering and Science

FIGURE 3



LEGEND

- MW6-12 — GROUNDWATER MONITORING WELL
- 0.35 — GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 0.35 — GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- APPARENT GROUNDWATER FLOW DIRECTION

NOTES:

1. GROUNDWATER LEVEL DATA WERE COLLECTED ON 12/6-7/2004.
2. GROUNDWATER GRADIENT WAS DETERMINED AT 0.0011 FEET/FOOT TO THE NORTHEAST.
3. "NA" DECEMBER 2004 GROUNDWATER LEVEL DATA ARE NOT AVAILABLE.
4. DATA FROM ONLY "A" ZONE WELLS WERE USED FOR CONTOURING.

0 60 120

APPROXIMATE SCALE IN FEET

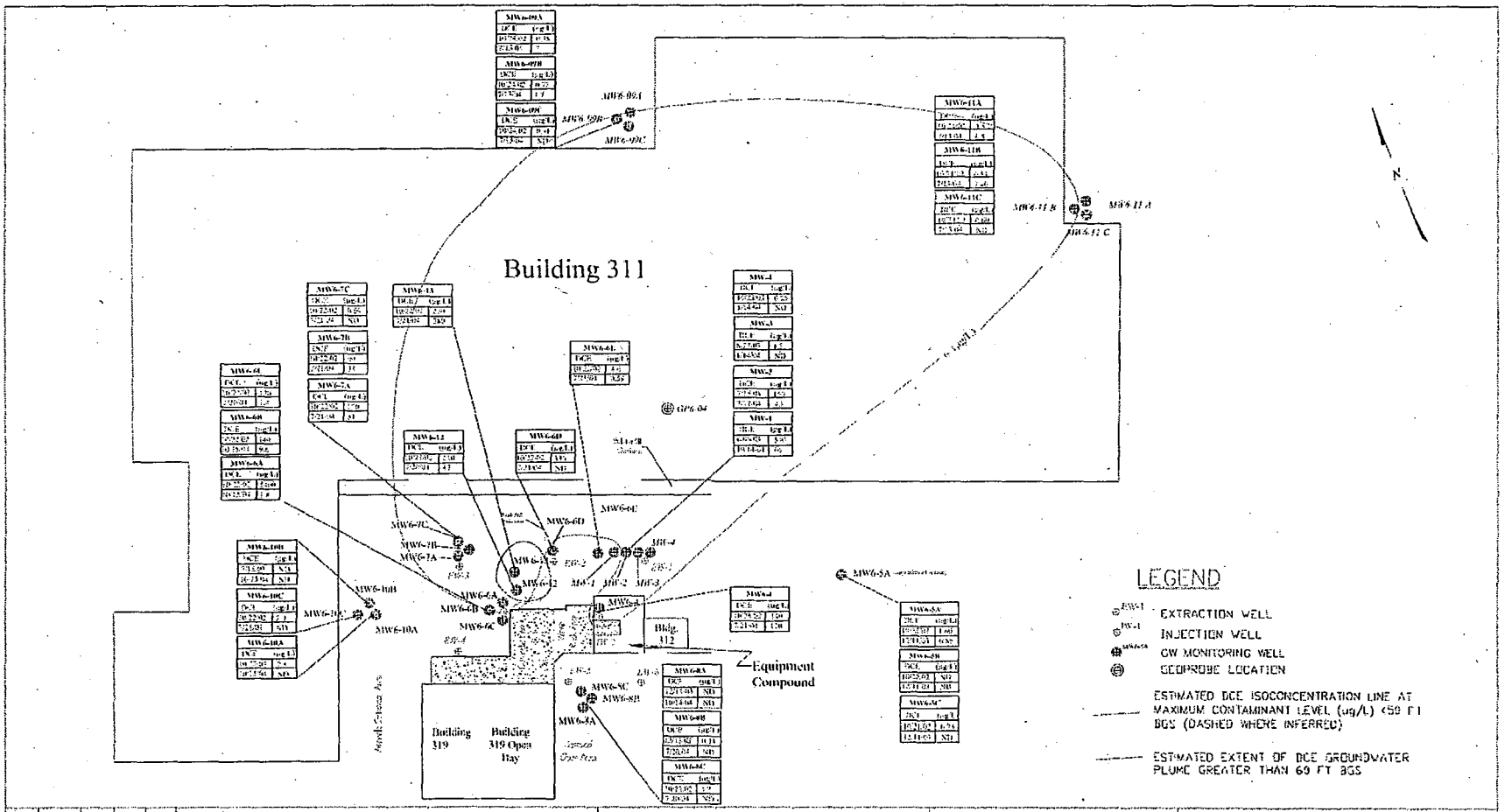
DATE:	PREPARED FOR:
3/2/2005	U.S. NAVY SOUTHWEST DIVISION, SAN DIEGO, CA

SITE PLAN ILLUSTRATING GROUNDWATER GRADIENT DECEMBER 2004

IR SITE 6 (BUILDING 311 YARD)
NAS, NBVC, POINT MUGU, CA

T N & Associates, Inc.
Engineering and Science

FIGURE 4



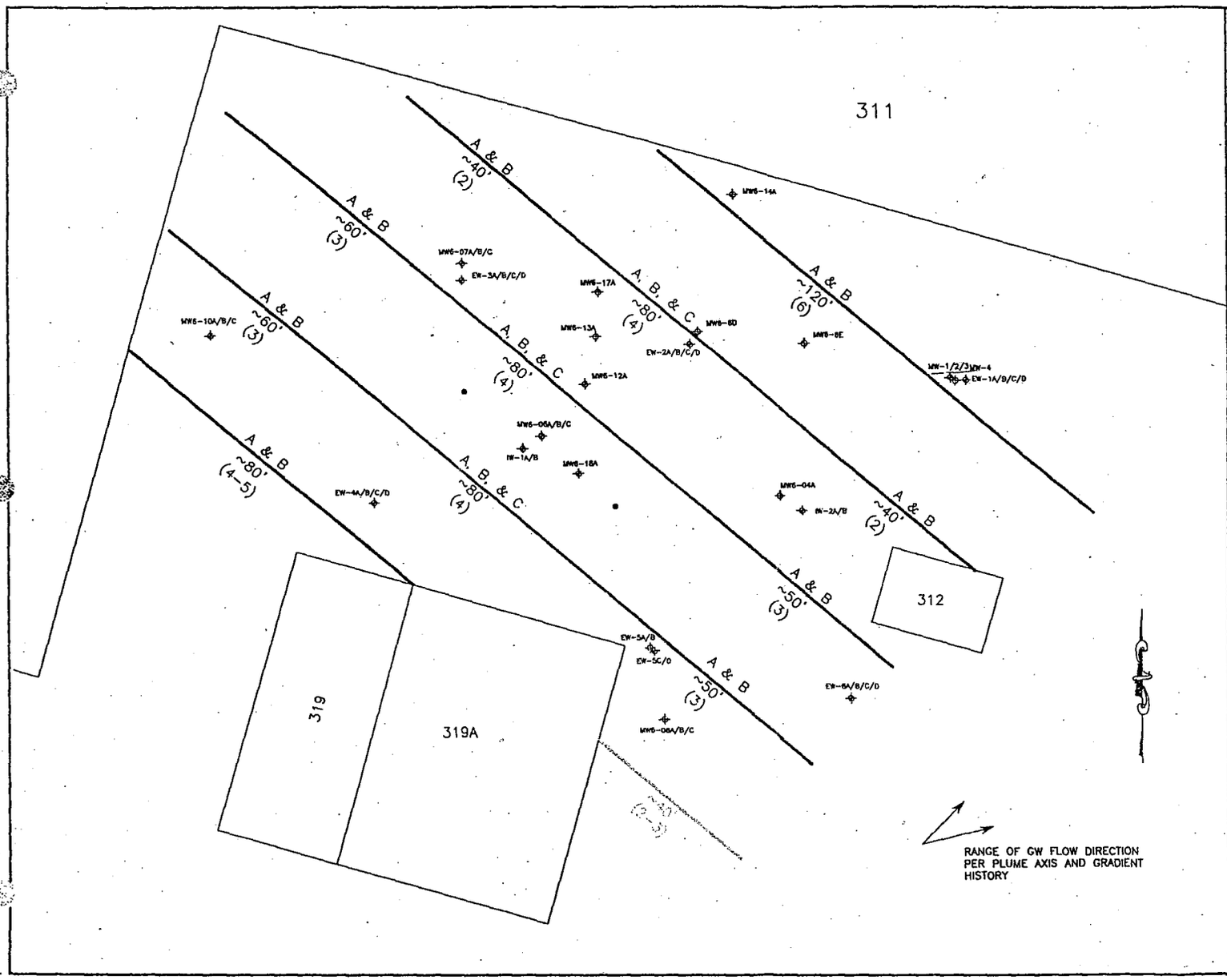
REV	DATE	BY	CHECK	APP	DESCRIPTION

TERRA VAC
1211 N BARSTEN WAY
ANAHEIM, CA 92806

DCE CONCENTRATION MAP
JULY, OCTOBER 2004 SAMPLING EVENT
IRP SITE 6 PT MUGU NBVC
PT MUGU, CA

DRAWN BY:	CHECKED BY:	PROJECT NO:
SSO		31-1002
APPROVED BY:	DATE:	SCALE:
	8/20/04	AS SHOWN

Figure 5



LEGEND

MW6-07A/B/C	ANNUAL GROUNDWATER MONITORING WELLS (NESTED; ZONES A, B, & C)
MW6-07A/B/C	REMEDIAL PROGRESS AND ANNUAL GROUNDWATER MONITORING WELLS (NESTED; ZONES A, B, & C)
IW-2A/B	INJECTION WELLS (NESTED; ZONES A&B)
EW-6A/B/C/D	EXTRACTION WELLS (NESTED; ZONES A, B, C & D)
MW6-17A	EXISTING MONITORIG WELLS
~80' (4)	INDICATES THAT THE LENGHT OF THE INJECTION ROW IS APPROXIMATELY 80 FEET AND THE ESTIMATED NUMBER OF INJECTION POINTS IS 4.

ROWS OF INJECTION POINTS:

A&B&C	A, B, AND C ZONES (12 INJECTION POINTS; INJECTION DEPTH INTERVAL: 5-55 FT BGS)
A&B	A AND B ZONES (UP TO 27 INJECTION POINTS; INJECTION DEPTH INTERVAL: 5-35 FT BGS)
B Only	B ZONE ONLY (UP TO 3 INJECTION POINTS; INJECTION DEPTH INTERVAL: 25-35 FT BGS)
●	OPTIONAL INTERMEDIATE INJECTION POINTS IN "SOURCE AREA"

NOTES:

1. DISTANCE BETWEEN THE INJECTION POINTS IS APPROXIMATELY 20 FEET WITHIN THE INJECTION ROW. THE ROWS OF INJECTION POINTS ARE 25 FT APART.
2. THE EXISTING INJECTION AND EXTRACTION WELLS CAN BE UTILIZED AS ADDITIONAL INJECTION POINTS.

0 20 40

APPROXIMATE SCALE IN FEET

DATE: 2/2/2005	PREPARED FOR U.S. NAVY SOUTHWEST DIVISION, SAN DIEGO, CA

CONCEPTUAL DESIGN OF SUBSTRATE DELIVERY INJECTION POINTS EISB PILOT TEST

IR SITE 6 (BUILDING 311 YARD)
NAVAL AIR STATION POINT MUGU, CA

TN & A T N & Associates, Inc. Engineering and Science

FIGURE 6

California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Dr. Alan Lloyd
Agency Secretary

Arnold Schwarzenegger
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

October 5, 2005

Mr. Steve Granade, Environmental Engineer
Naval Base Ventura County
Environmental Division, Code N45V
311 Main Road, Suite #1
Point Mugu, CA 93042-5000

GENERAL WASTE DISCHARGE REQUIREMENTS (ORDER NO. R4-2005-0030, SERIES NO. 026, CI NO. 8954) LACTATE AND SOY OIL INJECTION PILOT TEST TO EVALUATE ENHANCED NATURAL ATTENUATION OF VOLATILE ORGANIC COMPOUNDS (VOCS) IN GROUNDWATER – INSTALLATION RESTORATION PROGRAM SITE 6 (BUILDING 311 YARD), 311 11TH STREET, NAVAL BASE VENTURA COUNTY, POINT MUGU, CALIFORNIA (SLIC NO. 282)

Dear Mr. Granade:

Los Angeles Regional Water Quality Control Board (Regional Board) staff have completed our review of your application for coverage under General Waste Discharge Requirements (WDR) to inject a solution of site groundwater mixed with emulsified soy oil and lactic acid into the shallow aquifer underlying the site to enhance naturally occurring bioremediation of VOCs. We have determined that the proposed discharge meets the conditions specified in Regional Board Order No. R4-2005-0030, "*General Waste Discharge Requirements for Groundwater Remediation at Petroleum Hydrocarbon Fuel and/or Volatile Organic Compound Impacted Sites*," adopted by this Regional Board on May 5, 2005. Refer to the attached Fact Sheet.

The primary contaminants in groundwater at the site are 1,2-dichloroethene, 1,1-dichloroethene, 1,1,2-trichloroethane, 1,1-dichloroethane, trichloroethene, 1,2-dichloroethane, tetrachloroethene, and vinyl chloride.

You may begin to inject a maximum of 10,000 gallons of an aqueous solution containing approximately 13,500 lbs of emulsified soy oil and 10,600 pounds of lactic acid into the shallow aquifer between 5 and 55 feet below ground surface (bgs). The injection will occur into the dissolved VOCs plume, at Naval Base Ventura County, Point Mugu Naval Air Station, Installation Restoration Site 6, Building 311 Yard, at approximately Latitude: N34.11231°, Longitude: W-119.10617°.

Enclosed are your Waste Discharge Requirements, consisting of Regional Board Order No. R4-2005-0030 (Series 026) and Monitoring and Reporting Program No. CI-8954. Please note that the discharge limits in Attachment A [DWR Basin No. 4-4 (Oxnard Plain – Unconfined and Perched Aquifers)] of this Order No. R4-2005-0030 are applicable to your discharge.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this enrollment (September 15, 2005) under Regional Board Order No. R4-2005-0030. All monitoring reports shall be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to "Compliance File No. CI-8954", which will assure that the reports are directed to the appropriate file and staff. Also, please do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

If you have any questions, please contact Mr. Peter Raftery at (213) 576-6724.

Sincerely,

for David A. Bachanowski, AEO
Jonathan Bishop
Executive Officer

Enclosures:

1) Fact Sheet
2) General Waste Discharge Requirements, Order No. R4-2005-0030 and Standard Provisions
3) Monitoring and Reporting Program, CI No. 8954

cc: Peter Chen, Department of Toxic Substances Control, Cypress
Christine Bucklin, Department of Toxic Substances Control, Glendale
Michael Lauffer, State Water Resources Control Board, Office of Chief Counsel
Tim Garvey, TN & A, Ventura
Kurt Souza, State Department of Health Services, Drinking Water Field Operations Branch, Carpinteria
Jessie Altstatt, Santa Barbara Channel Keeper
Barbara Carey, California Coastal Commission, South Central Coast Office Vicki Clark, Environmental Defense Center
Allison Detmer, California Coastal Commission, Energy and Ocean Resources Division
Mary Meyer, California Department of Fish & Game
Heal the Bay
Port Hueneme Water Agency
Doug Beach, Ventura County Environmental Health
Glen Luscomb, Ventura County Public Works

S:\SLIC\PJR\PMUGU\mugu IR site 6\wdr 2005\mugu site 6 general wdr cvr ltr sept05.doc

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
320 West 4th Street, Suite 200, Los Angeles, California 90013

FACT SHEET
WASTE DISCHARGE REQUIREMENTS
FOR
NAVAL BASE VENTURA COUNTY
NAVAL AIR STATION, POINT MUGU
INSTALLATION RESTORATION SITE 6 (BUILDING 311)

LACTATE AND SOY OIL INJECTION PILOT TEST

ORDER NO. R4-2005-0030 (SERIES NO. 026)
CI-8954, FILE# 98-017

FACILITY ADDRESS
Building 311 Yard
311 11th Street
Point Mugu, California

FACILITY MAILING ADDRESS
Mr. Steve Granade, Environmental Engineer
Naval Base Ventura County
Environmental Division, Code N45V
311 Main Road, Suite 1
Point Mugu, CA 93042-5000

PROJECT DESCRIPTION

The address for this remediation site is 311 11th Street, Point Mugu, Latitude: N34.11231°, Longitude: W-119.10617°. (Figures 1 through 6). Naval activities began at the Point Mugu facility in 1943. Installation Restoration Site 6 is in the Building 311 service yard, between 11th and 13th Streets and west of South Mugu Road. The yard is an unpaved area measuring 50 feet by 250 feet. Between 1965 and 1978 the area was used to dispose of waste, including acid plating waste, solvents, and sandblasting abrasives. An oil/water separator which received paint stripper discharge leaked and released an unknown volume of chlorinated solvents, which contaminated soil and groundwater in the vicinity. This was documented by sampling in 2000. Groundwater contaminants include 1,2-dichloroethene, 1,1-dichloroethene, 1,1,2-trichloroethane, 1,1-dichloroethane, trichloroethene, 1,2-dichloroethane, tetrachloroethene, and vinyl chloride. The dissolved cis-1,2-dichloroethene plume is the largest of the dissolved contaminant plumes underlying the site. The approximate dimensions of the 6 micrograms per liter (µg/L) contour of this plume are 250 feet by 500 feet. It extends approximately 500 feet to the northeast from the area of release. Groundwater occurs approximately 6 feet to 8 feet below grade at the site, and groundwater flows toward the northeast. A mixture of lactate and soy oil will be injected into the contaminated groundwater to enhance naturally occurring anaerobic remediation of the dissolved contaminants.

VOLUME AND DESCRIPTION OF INJECTION

The U.S. Navy, is planning to inject approximately 8,850 gallons of an aqueous solution containing approximately 13,493 pounds of emulsified soy oil and 10, 523 pounds of lactic acid into the shallow aquifer between 5 feet and 55 feet below ground surface (bgs). There will be approximately 42 temporary injection points. The depths of injection are designed to target the contaminant plume. At some injection points, injection will occur over the entire 5 feet to 55 feet interval, others will be limited to the 5 to 35 feet interval and others will only have injection from 25 to 35 feet bgs. The solution is expected to enhance the natural degradation of the volatile organic contaminants. The injection locations are shown on Figure 6.

The injection rate will be determined from information obtained in the field during initial injection. The injection rates will be high enough to spread the material being injected but low enough to limit fluid mounding near the injection areas. The duration of injection will be a function of injection rate, which will not exceed 8 gallons per minute (gpm). The injection points with the longer intervals (5 to 55 feet bgs and 5 to 35 feet bgs) are expected to receive approximately 215 gallons of material. Whereas the locations with the shorter interval (25 to 35 feet bgs) will receive approximately 150 gallons.

Additional information on the procedures, methods, and evaluation plan are included in the *Draft Work Plan for An Enhanced In-Situ Bioremediation Pilot Test at IR Site 6, Naval Air Station Point Mugu, California* (Work Plan), dated March 2005.

The injection of emulsified soy oil and lactic acid into the groundwater are discharges of waste as defined in Section 13260 of the California Water Code. However, the discharges are expected to result in significant reductions in contaminant concentrations in the site's polluted groundwater.

The Water Quality Control Plan for the Los Angeles Region designates the groundwater in the Oxnard Plain Basin for beneficial uses including municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.

The permitted discharge is consistent with the antidegradation provisions of State Water Resources Control Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized exceedences of background concentrations of constituents such as sodium, sulfate, and magnesium, although these are chemicals that naturally occur at elevated concentrations in the seawater near the site. These exceedences are not anticipated to result in any long-term groundwater degradation. The Navy submitted a contingency plan (dated September 22, 2005) to the Regional Board to counter any deleterious results of the pilot test. The contingency plan includes options to control dissolved materials using existing groundwater extraction wells, and/or to enhance aerobic or anaerobic degradation of contaminants using one or more types of enhanced in-situ bioremediation.