

Mr. Nereus L. Richardson  
Orange County Water District  
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## CONDUCT OF STUDY

Basic data pertinent to the study was collected from the District, the California Department of Water Resources (CDWR) and the internal files of Montgomery. Information reviewed as part of the study included published and unpublished geologic and hydrogeologic reports and maps, lithologic and electric logs of oil and water wells, analyses of ground water, ground water level measurements, and as-built well designs. A north-south trending hydrogeologic profile was prepared extending from an existing City water well in Fountain Valley to near 19th Street in Costa Mesa. The profile was used to determine the continuity and thickness of potential water-bearing zones on the Mesa. The hydrogeologic sketch has been included in this report for reference purposes. Water quality data was evaluated in the context of this postulated hydrogeologic framework to estimate the local water quality conditions. An exploratory drilling and testing program was then formulated to evaluate the ground water conditions at two general locations on the Mesa. The results of the investigation have been summarized and are presented in this letter report.

## HYDROGEOLOGY

### Geologic Setting

The Newport Mesa area is underlain by a sequence of sedimentary deposits whose total thickness exceeds 5,000 feet. These sedimentary deposits range in age from Recent to Miocene (approximately 10 million years old). The maximum depth to the base of fresh water-bearing sediments is unknown, but probably does not exceed about 1,100 feet at the 405 Freeway.

The base of the fresh water-bearing sediments in the Newport Mesa area is believed to be the Pliocene (approximately 5 million years old) Upper Pico Formation. The Upper Pico Formation consists of generally fine-grained deposits (silts and clays) of marine origin. Overlying the Pico Formation are the Lower Pleistocene (about 1 to 2 million years old) deposits of the San Pedro Formation which contain several zones of relatively permeable coarse sands and gravels separated by less permeable fine-grained material. These deposits are probably of neritic marine origin (deposited in less than 600 feet of water). Unconformably overlying the Lower Pleistocene deposits of the San Pedro Formation are Upper Pleistocene deposits consisting of interbedded gravel, sand, silt and clay. The Upper Pleistocene deposits are chiefly of fluvial origin (stream deposited), and are probably the most permeable sediments underlying the Newport Mesa area.

### Structure

Intermittent folding and faulting associated with the Newport-Inglewood Fault Zone and relative changes in sea level since Miocene time have complicated the structure and the stratigraphy of the Pleistocene and Pliocene water-bearing deposits. In addition, local unconformities and facies changes combine to make correlation of small-scale stratigraphic zones difficult. Plate 2 depicts the interpreted subsurface geology of the Newport Mesa area, based on available

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data. The line of profile, as presented on Plate 1, is generally coincident with Harbor Boulevard, which trends in a north-south direction. Based upon correlation of geophysical and lithologic data, the Pliocene Pico Formation and the Upper and Lower Pleistocene deposits thicken to the north and occur at progressively greater depths to the north of Orange Coast College.

A major structural feature of the Newport Mesa is the Bolsa-Fairview Fault, which appears to displace stratigraphic units in the upward direction on the north side of the fault (Plate 2). The location and relative displacement of the fault are postulated from subsurface correlation, so that the exact location of this and other possible faults is somewhat uncertain. Based upon our interpretation of the available data, there is a relatively high probability that the Bolsa-Fairview acts as a barrier to ground water flow.

#### Water-bearing Units

Individual aquifer units have been delineated in the Pleistocene deposits to the north and east of Newport Mesa in previous studies by Montgomery and the California Department of Water Resources. Although strict identification is difficult, these aquifer units have been tentatively correlated to the Newport Mesa based on careful review of water and oil well logs.

As shown on Plate 2, the principal water-bearing units in the southern portion of the Orange County ground water basin have been identified at Fountain Valley No. 6 (5S/10W-28B9). From there to the Mesa, these units become much thinner and cannot be traced with confidence beyond Mesa Consolidated Water District Well No. 6 (5S/10W-34P). The lithologic logs of wells drilled on the south side of the San Diego Freeway (I-405) indicate that a 600- to 800-foot thick section of permeable sand with some gravel has been encountered as far south as the Bolsa-Fairview Fault. Clay and silt dominate the Lower Pleistocene deposits on the south side of the fault to the south end of the line of profile.

#### Historic Ground Water Production

Plate 1 shows the locations of water or oil wells for which lithologic or geophysical logs are available. Also shown on Plate 1 are wells that are known to be "active", meaning those currently being used for ground water production. Numerous other water supply wells have been constructed on the Mesa, however, construction details are not available. Review of details for wells on the Mesa indicates that known existing wells have generally produced ground water from depths of less than 500 feet. This would mean that the principal water-bearing zones of those wells were within the Upper Pleistocene deposits.

#### GROUND WATER QUALITY

The quality of ground water underlying the Newport Mesa area appears highly variable based on the limited data available. Typically, ground water produced from the Upper and Lower Pleistocene deposits is of sodium bicarbonate character, with locally high concentrations of sulfate and chloride ions. Commonly, the concentration of total dissolved solids (TDS) ranges from 200 to

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400 milligrams per liter (mg/l). The concentration of sodium is typically between 50 and 80 mg/L. These concentrations of sodium exceed the EPA's 1980 Amendments to the Interim Primary Drinking Water Regulations suggested optimum level of 20 mg/l (high sodium concentrations are of concern to that portion of the population on sodium-restricted diets).

Ground water with high color has been encountered within the Lower Pleistocene deposits. Plate 2 indicates the estimated top of the colored water as defined from existing water quality data. However, the production of ground water from existing wells may have now induced the migration of colored water to shallower aquifers above the Upper Main.

Local ground water zones of the Newport Mesa area show adverse concentrations of individual constituents, as described below:

Relatively warm, mineralized waters are found in the western half of Section 9, T6S/R10W. Ground water temperatures in Wells 9M1, 9M2, 9M3 and 9E2 range from 76 to 81°F. Sodium concentrations exceeding 150 mg/l and chloride concentrations exceeding 250 mg/l render the warm ground waters in this vicinity unsuitable for domestic uses. This water of inferior quality appears localized to the central western portion of Section 9 and may be associated with an otherwise unknown fault in this area. Warm mineralized water has also been found in the northwest corner of Section 10 (6S/10W) in the vicinity of Orange Coast College. Waring (1915) reported artesian flow of 96°F water from a 700-foot deep well at Fairview Spring. Warm, mineralized water in this vicinity is probably associated with the northwest trending Bolsa-Fairview Fault which has been mapped in the vicinity of Orange Coast College (Piper, 1956).

Other areas of locally inferior water quality may be related to shallow water quality degradation. Water quality analyses on Well 6S/10W-3L1, conducted in October 1955, indicated a TDS concentration of 1,212 mg/l and sodium concentration of 523 mg/L. Based on data from nearby wells, the areal extent of this degraded water quality appears to be limited. Well 6S/10W-3M2, approximately 2,000 feet to the west, exhibited a TDS concentration of only 337 mg/l in May 1956. Ground water with a high sulfate concentration of 289 mg/l was found in Well 6S/10W-33Q1 in October 1951. The depth of this well is unknown.

In the southern portion of Newport Mesa, Upper Pleistocene deposits are relatively thin and Lower Pleistocene deposits are relatively shallow (Plate 2). However, available data suggests that ground water pumped from the Lower Pleistocene deposits south of the Bolsa-Fairview Fault may have relatively high TDS, chloride, sodium and sulfate concentrations. These high concentrations may be caused by the proximity of saline connate waters from the Pico Formation, and/or the relative lack of fresh water "flushing" due to the barrier effect of the Bolsa-Fairview Fault. These ground waters have been termed "posnate waters" by CDWR.

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#### FINDINGS AND CONCLUSIONS

- 1) The hydrogeology and water quality of the Newport Mesa present some opportunity for future ground water development within a limited geographic area. The principal physical constraints to such development are the limited thickness of the Pleistocene deposits, and the evidence of locally high TDS, sodium and chloride ions, as well as isolated warm mineralized water.
- 2) New extraction wells may be capable of producing up to 500 gpm from the Pleistocene deposits. The optimum locale for new well siting is between I-405 and Orange Coast College.
- 3) The subsurface hydrogeology remains somewhat in question in the Newport Mesa area. Detailed preliminary subsurface exploration and testing would be highly desirable as an initial investigative step prior to final selection of production well sites and the establishment of production well design criteria.
- 4) Local ground water quality is highly variable and will be a key element in the planning for future ground water extraction on Newport Mesa. Site-specific water quality testing will be required to determine the actual water quality conditions of individual aquifers prior to design and installation of a production well(s).

#### RECOMMENDATIONS

- 1) A limited exploratory drilling and testing program is recommended to determine the hydrogeology and water quality conditions on Newport Mesa. The minimum program should consist of drilling, logging and testing two deep exploratory test holes. Test hole locations are recommended in the general area between Orange Coast College and MCWD Well No. 6. A setback of approximately 2,500 feet should be maintained from MCWD Well No. 6 to reduce potential water level impact on that well from a proposed production well.
- 2) The exploratory test program should consist of the following elements:
  - Drill two direct mud rotary test holes down to an approximate depth of 800 feet. Conduct geophysical surveys of the test holes and identify potential water-bearing zones.
  - Install 6-inch diameter PVC casing with perforated intervals located within the permeable, water-bearing units.
  - Collect and analyze representative ground water samples from the test wells.

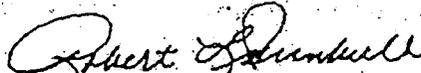
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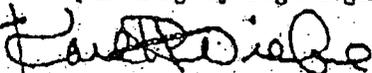
- 3) Should the exploratory test wells demonstrate to the District that the quality of the ground water is suited for municipal uses, the PVC casing(s) could be drilled out at a later date. The test wells could be converted to production wells by sufficiently enlarging the well bore diameter and installing steel well casing, well screen and pumping equipment.
- 4) The exploratory drilling and testing program could be completed within a period of about 4 to 6 weeks after providing the notice-to-proceed to a drilling contractor. The estimated construction cost of the two test wells, as described, is on the order of \$90,000 to \$120,000.

We have enjoyed the opportunity to work with you on this project. If you have questions regarding the content of this report, please call.

Very truly yours,

JAMES M. MONTGOMERY,  
CONSULTING ENGINEERS, INC.

  
Robert L. Turnbull  
Supervising Hydrogeologist

  
Karl H. Wiebe  
Vice President  
/ncy

## REFERENCES

Poland, J.F., and Piper, A.M., U.S. Geological Survey, Groundwater Geology of the Coastal Zone Long Beach-Santa Ana Area, California, WSP-1109, 1956.

Piper, A.M., and Garrett, A.A., U.S. Geological Survey, Native and Contaminated Ground Waters in the Long Beach-Santa Ana Area, California, WSP-1136, 1953.

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\_\_\_\_\_, Preliminary Draft Report, Irvine Area Study, September 1983.

Waring, G.A., U.S. Geological Survey, Springs of California, WSP-338, 1915.

**Exhibit M**



**Delta**  
Environmental  
Consultants, Inc.

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Rancho Cordova, CA 95670  
916/638-2085  
FAX: 916/638-8385

SANTA ANA REGION	
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	JUL 20 1990
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NOMI 7/25	

July 19, 1990

Mr. Steven Overman  
Pollutant Investigation Section  
California Regional Water Quality Control Board,  
Santa Ana Region  
6809 Indiana Avenue, Suite 200  
Riverside, California 92506

Subject: Response to May 24, 1990 Letter  
J. C. Carter, Inc.  
671 West Seventeenth Street, Costa Mesa, California  
Delta Project No. 40-90-005

Dear Mr. Overman:

In response to your letter dated May 24, 1990, to Mr. Gordon Rusk, J. C. Carter, Inc. (enclosed), Delta Environmental Consultants, Inc. (Delta), on behalf of its client J. C. Carter, Inc., has performed a detailed evaluation of the regional geology, hydrogeology, and ground water use in the vicinity of the subject site. Information used for this evaluation consisted of U.S. Geological Survey hydrogeologic papers, phone conversations with the California Department of Water Resources, Orange County Water District, City of Newport Water District, and data collected from drilling activities at the subject site.

Regional Geology and Hydrogeology

The site is located on the Newport Mesa (Figure 1). The lithology beneath this site is defined by two units. The upper unit is an Upper Pleistocene non-fossiliferous reddish-brown sand most likely continental in origin. This unit is approximately 35 to 45 feet in thickness and acts as a terrace cover for the mesa. Beneath this unit is the Puente formation of Wissler which is Miocene in age. The lithology of this formation consists chiefly of fine-grained sediments (i.e., sandy micaceous siltstone, shale, and sandy claystone) with some sands. These sediments are largely impervious to ground water flow. The quality of the ground water from the sandy members of this formation (if they contain any water) ranges in salinity content from 50 to 100 percent of ocean water (J.F. Poland and A.M. Piper, U.S. Geological Survey, Water Supply Paper, 1109, p. 39). The thickness of this formation is several thousand feet as indicated by the cross-section in Figure 1. The line of section is presented in Figure 2.

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According to J.F. Poland and A.M. Piper (U.S. Geological Survey Water Supply Paper, 1109, p. 38), the mesa sands are above the water table and are therefore unsaturated. However, this unit beneath the site contains ground water that is flowing toward the ocean (see Delta's April 23, 1990 report). This ground water is perched. Evidence for this conclusion can be found in the boring logs from monitoring wells MW-6 and MW-7. The contact between the Newport Mesa sands and the fine-grained Puente formation of Wissler can be seen in the cross-section presented in Figure 3. The line of section is presented in Figure 4. The coarse-grained yellowish-brown sands rest on a much less permeable greenish-grey clayey silt and silty clay. The clayey silts and silty clay contain shell fragments which can be used as an indicator to distinguish between the upper non-fossiliferous mesa sand and the lower Puente formation of Wissler.

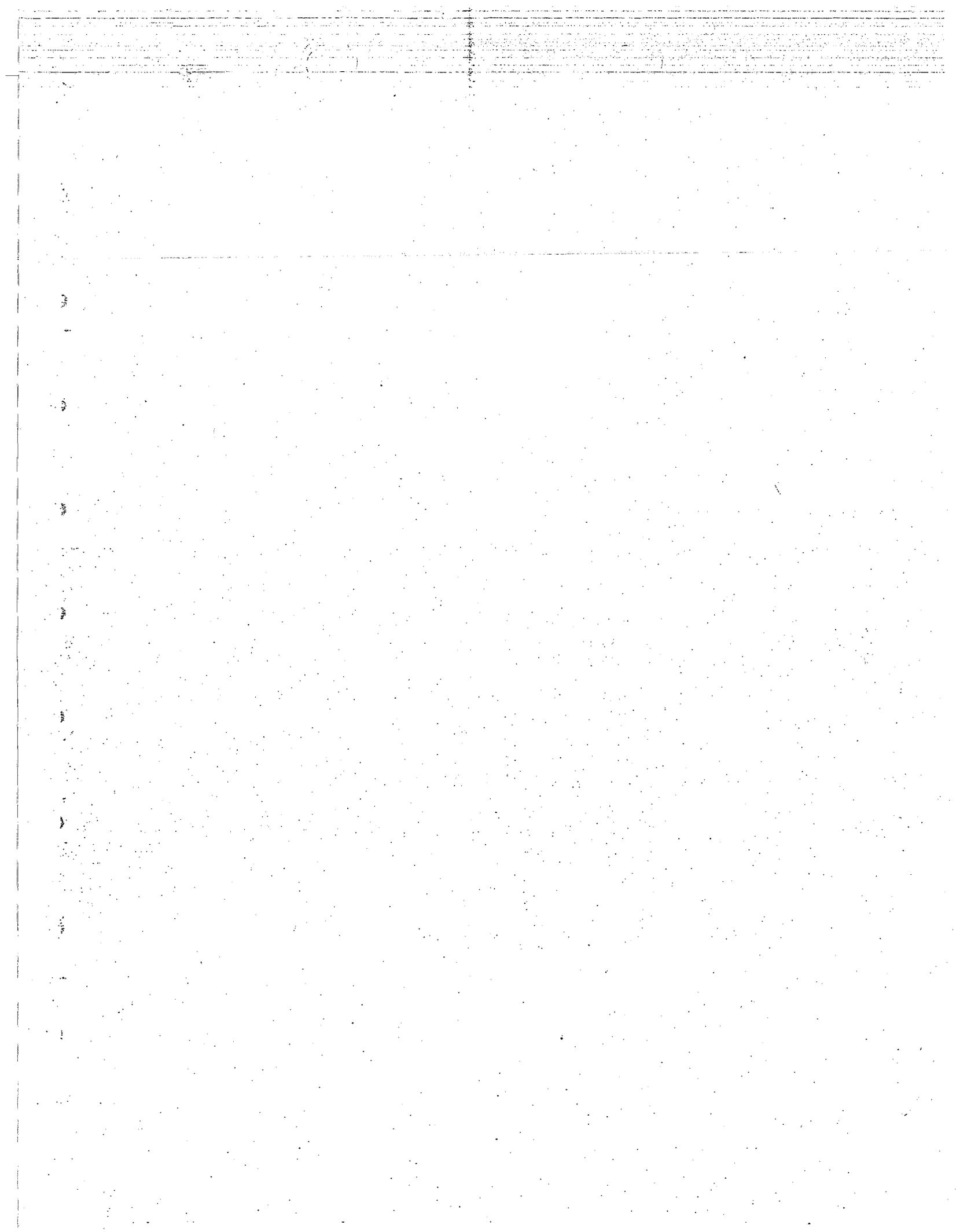
#### Ground Water Use

A water well survey was performed by Delta. Phone conversations were conducted with Mr. Law of the California Department of Water Resources, Janet Burkland of the Orange County Water District, and Gringer Barin of the Newport Water District. All representatives contacted confirmed that there are no water wells within at least a 2-mile-radius of the site, and the nearest confirmed water well is located approximately 10 miles upgradient of the site near the South Coast Plaza Shopping Center. The only downgradient receptor from the site is the Pacific Ocean. Literature research supports this finding because of the poor quality of ground water beneath the southern portion of the Newport Mesa. As stated by J.F. Poland (U.S. Geological Survey Water Supply Paper 1471, pp. 54 and 55), "Within the past 70 years, several other water wells have been drilled south of the inferred fault (see Figure 2 Delta), but all have tapped water of inferior quality and all are now unused. The chemical character of the water tapped by one of these unused wells, 6/10-10D3 (see Figure 2 Delta) is described in the reports on geologic features and on chemical character of the ground waters (Piper, Garrett, and others, 193, p. 258; Poland, Piper, and others, 1956, p. 104)."

#### Recommendations

It is Delta's recommendation that the upgradient well from MW-8 and the two downgradient wells from MW-9 requested in your May 24, 1990 letter, as well as the deeper monitoring well to access the vertical extent of the TCE plume are not necessary. The reasons for this recommendation are as follows:

- The site is underlain by the impermeable Puente formation.
- There are no downgradient receptors that would create a potential for human health hazards.
- There are no known aquifers containing usable water beneath the site. Existing ground water in the area is of very poor quality.
- The only potential receptor within 2 miles of the site is the Pacific Ocean.
- Permissible concentrations of TCE in saltwater to protect saltwater aquatic life have been set at 2,000 parts per billion (ppb), an order of magnitude higher than the downgradient concentration of 200 ppb identified in MW-9. (Handbook of Toxic and Hazardous Chemicals and Carcinogens, Marshall Sittig, 1985; and U.S. Environmental Protection Agency National Ambient Water Quality Criteria to Protect Saltwater Aquatic Life.)



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Regarding your recommendation that J. C. Carter, Inc., investigate off-site sources for the PCE plume to eliminate themselves as a possible source, it is Delta's opinion that this is unreasonable because the evidence clearly points to a source other than J. C. Carter, Inc., and also no on-site soil samples have been collected that contain PCE. We recommend that the Santa Ana Water Quality Board request that independent investigations be conducted by potential upgradient sources.

It is the opinion of Delta that further investigation in the vicinity of the J. C. Carter, Inc., site is not warranted at this time, and further, it is not in the best interests of the Santa Ana Regional Water Quality Control Board and J. C. Carter, Inc., to expend additional funds and time pursuing such an investigation.

If you have any questions regarding these matters or would like to set up a meeting to further discuss these items, please contact me at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

*Hal E. Hansen*

Hal E. Hansen  
Hydrogeologist

HEH:ecd  
Enclosures

cc/enc: Mr. A. L. Simmons, Consultant  
Ms. Lisa Prouty, Orange County Health Department  
Mr. Gordon Rusk, Vice President Operations, J. C. Carter Company, Inc.  
Ms. Judy Berray, Maintenance Supervisor, J. C. Carter Company, Inc.  
Ms. Nancy Martin, Santa Ana Regional Water Quality Control Board

**Exhibit N**

California Regional Water Quality Control Board  
Santa Ana Region

January 26, 1996

ITEM: 10

SUBJECT: Direction of the Underground Tank Program

DISCUSSION:

The Underground Storage Tank Program has been in existence since 1984 when findings that a significant percentage of underground tanks leaked prompted State legislation to address the problem. The vast majority of underground tanks contain petroleum products, mainly gasoline. The typical procedure that is followed after a petroleum release is identified is to repair or remove the tank to stop the leakage, define the volume of affected soils and/or groundwater through soil borings and groundwater monitoring wells, and actively remediate the affected volumes of soils and groundwater.

Recently, the Underground Storage Tank Program of the State Water Resources Control Board contracted with Lawrence Livermore National Laboratory (LLNL) to review the current regulatory framework and cleanup process. The results of this review were released on October 16, 1995, in a report entitled "Recommendations To Improve the Cleanup Process for California's Leaking Underground Fuel Tanks (LUFTs)". In early December, a memo from the State Water Board Executive Director was issued which recommended implementing recommendations of the LLNL report for "low-risk" cases.

Summary of the LLNL Report

The primary recommendations of the report consist of the following:

- 1) That passive bioremediation should be considered as a remediation alternative whenever possible;
- 2) That State Board policies should be modified to allow risk-based decision making for LUFT cleanups;
- 3) That such risk-based cleanups should use passive remediation whenever possible.

The following is a synopsis of the primary findings, conclusions and recommendations within the October 16, 1995 report.

## Findings

### 1. LUFT Impacts to Groundwater Resources

Out of the 12,151 public water supply wells tested statewide, only 48 (0.4%) were reported to have measurable benzene concentrations. Additionally, a review of the state's database of the 28,051 LUFT cases shows that 138 LUFT sites (0.5%) have reportedly affected drinking water wells.

### 2. Derivation of LUFT Cleanup Requirements

Under current regulations and policies, the minimum cleanup standards for LUFT cases affecting groundwater are the Maximum Contaminant Levels (MCLs) for drinking water. One of the reasons for this is the application of the State Board's Resolution 88-83 (Sources of Drinking Water Policy) which requires almost all state waters to be designated as potential sources of drinking water (the MUN designation). Strict cleanup is also indicated by the existing version of the state's groundwater cleanup policy (Resolution 92-49) which sets background water quality as a cleanup goal. Numeric cleanup standards are not established for residual fuel hydrocarbons (FHCs) in soils.

### 3. Application of LUFT Regulatory Framework

Groundwater cleanup requirements were found to be consistently applied statewide, due to the presence of numeric standards. As a practical matter, regional boards and local agencies usually rely on the MCL limits for benzene (1 ppb), toluene (100 ppb), ethylbenzene (680 ppb), and xylenes (1,750 ppb) as cleanup levels instead of insisting on cleanups to actual background levels or to odor and taste thresholds. Many cases are difficult to close because achieving the existing groundwater standards and goals is often technically and economically infeasible.

### 4. Technical Feasibility

The report observes that, if a fuel hydrocarbon source is removed, passive bioremediation processes act to naturally reduce FHC plume mass and eventually complete the fuel hydrocarbon cleanup. Passive bioremediation can provide a remediation alternative that is as efficient as actively engineered remediation processes such as pump and treat.

### 5. Economic Impact of Current LUFT Problem

The average LUFT case reimbursement from the Underground Tank Cleanup Fund is currently about \$150,000. The number of tank removals is expected to increase dramatically in the next few years, due to the requirements of federal regulations and state law requiring all operating underground storage tanks (USTs) to be upgraded or replaced by 1998. The majority of UST releases are discovered when the tanks are

## Direction of the Underground Tank Program - Staff Report

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removed and leakage from the piping is uncovered. The ongoing and future fiscal effect of LUFT cleanups on the California economy is estimated to be over \$3 billion. Only about \$1.5 billion will be raised by the time the Cleanup Fund program ends in 2005.

Conclusions of the LLNL report

- Fuel hydrocarbons have limited impacts on human health and the environment.
- The cost of cleaning up LUFT releases is often inappropriate when compared to the magnitude of the impact on groundwater.
- LUFT groundwater cleanup requirements are derived from policies that are inconsistent with the current state of knowledge and experience.
- Current State Water Board policies that set groundwater cleanup levels at background or MCL levels are a barrier to setting risk-based cleanup levels.
- Current understanding of passive bioremediation processes in the subsurface environment is not reflected in the present LUFT cleanup process.
- There are few situations where pump-and-treat should be attempted.
- A risk-based corrective action (RBCA) framework offers a common decision-making process to systematically address LUFT cleanups.
- Modifications of the RBCA framework developed by the American Society of Testing and Materials (ASTM) would be necessary for the process to be used in California.
- A common, systematic decision-making process using standard procedures will reduce inconsistencies in soil cleanup requirements.
- Total petroleum hydrocarbons (TPH) measurements should not be used to predict benzene concentrations.

Recommendations of the LLNL report

- Utilize passive bioremediation as a remediation alternative whenever possible.
- Immediately modify the ASTM Risk-Based Corrective Action framework based on California historical LUFT case data.
- Apply a modified ASTM RBCA framework as soon as possible to LUFT cases where FHCs have affected soil but do not threaten groundwater.

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- Modify the LUFT regulatory framework to allow the consideration of risk-based cleanup goals higher than Maximum Contaminant Levels.
- Identify a series of LUFT demonstration sites and form a pilot LUFT closure committee. A pilot LUFT closure committee, made up of scientific professionals from universities, private industry and state agencies, should be set up to make professional interpretations and recommendations regarding LUFT evaluations and closures at demonstration sites.

"Interim Guidance" from the State Board

Following the release of the Lawrence Livermore Report, a memo from Mr. Walt Pettit, Executive Director of the State Water Resources Control Board, was issued on December 8, 1995 concerning the implementation of the findings of this report. In this memo, Mr. Pettit recommended that cleanup oversight agencies eliminate the requirement for active remediation at low-risk soil and groundwater cases. Specifically, it was suggested that low-risk soil cases be closed and, in the case of low-risk groundwater cases, a transition from active remediation to monitoring be implemented. However, a clear definition of what a low-risk case actually is was not included in this memo. Subsequently, discussions with the State Board's Underground Tank Program Manager, Mr. James Glannopoulos, provided a direction that the individual Regional Boards can, in keeping with their specific Regional settings, determine how to define low-risk cases.

Staff's Response

Within the Santa Ana Region, a high level of urbanization, a high and increasing dependence on water supply derived from groundwaters and a relatively transmissive aquifer setting combine to create a situation where the groundwater resources are highly valued and susceptible to contamination.

In addition, Staff's review of the details of numerous groundwater cases within the Santa Ana Region suggests that not all of the findings of the LLNL report are supported by the data within our case files. The most noteworthy observation is that a significant percentage of these groundwater cases are older than ten years and yet still exhibit elevated concentrations of benzene. This observation is in contrast to the LLNL report's assertion that petroleum compounds in groundwater rapidly degrade. Staff concurs that degradation by biologic organisms will occur in the subsurface if suitable chemical conditions are present. However, as the chemical constituents which are necessary for biologic degradation are consumed, the rate of degradation declines significantly. It is possible that the overall rate of such degradation is insufficient to assure the adequate protection of the beneficial uses of the waters of the Santa Ana Region.

With this in mind, staff's recommendation for the definition of "low-risk" cases incorporates two primary criteria. The first criterion is whether the site is situated in an

area which does not recharge presently utilized drinking water aquifers. By this criterion, the coastal zone and non-water-bearing areas in the northern and southern portions of Orange County would be considered "low-risk" areas. The coastal zone is that area seaward of the salt water intrusion barriers maintained by the Orange County Water District. Other areas of the Region may also satisfy this criterion. In these areas, free petroleum product on the water table would be removed, and reductions in contaminant concentrations within the soil column and as a plume of dissolved phase in the groundwater would only be required if necessary to eliminate risk to human health or the environment. Ongoing monitoring of the contaminants left in place would confirm the anticipated reduction in contaminant concentration over time.

The second criterion for the definition of "low-risk" cases would identify sites where the levels of contamination are sufficiently low so as to be assumed to be addressed by the passive bioremediation processes discussed in the LLNL report. Such sites would not appear to pose a threat to the water resources of the Region. Specifically, staff recommends that the following thresholds be used to define such sites.

Contaminant	MCLs	"Low risk" threshold
Benzene	1 ppb	250 ppb
Toluene	150 ppb	300 ppb
Ethylbenzene	880 ppb	880 ppb
Xylene	1750 ppb	1750 ppb

For cases where the impacts to the underlying groundwaters do not currently exceed these levels, groundwater monitoring would provide the confirmation that the contaminant concentrations are diminishing.

For the remediation of the contamination within the soil column in light of the proposed "low-risk" thresholds, staff recommends that soil cleanup goals be based on a leaching analysis such that the contamination to remain in place does not pose a significant risk to the underlying groundwater. Staff will be working on a standardized approach for the issue of establishing site-specific soil cleanup goals in the future.

Outside of the above "low-risk" criteria are the cases where significant levels of soil and/or groundwater contamination are present. In contrast to the statement in the LLNL report, staff's experience has been that pump-and-treat technologies are able to achieve significant reductions in contaminant concentrations to the point where other processes, such as passive biodegradation, can be assumed to complete the reduction. Therefore, staff recommends that active remediation be utilized to lower the contaminant concentrations of the affected groundwaters to the "low-risk" thresholds listed above. Staff believes these thresholds are within the achievable range of the existing groundwater treatment technologies. If presently active remediation has achieved these levels, it would be appropriate that such activities be discontinued. Additionally, cases where the groundwater impacts are only slightly above the threshold levels, the

## Direction of the Underground Tank Program - Staff Report

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requirement for active remediation would be decided on a case-by-case basis determined by the site's threat to water resources.

**Proposed Staff Followup**

If the Board concurs with the above criteria, staff would send letters to all parties responsible for LUFT sites describing the Regional Board guidance regarding "low-risk" sites. In addition, staff proposes to immediately initiate a review of all cases for which the Board is the lead agency to determine appropriate courses of action consistent with the "low-risk" criteria and the State Board's "interim guidance." Responsible parties would then be notified of the results of the case reviews.

Many of the LUFT sites within the Region are overseen by local agencies. These agencies are either the counties' health departments working under a contract with the State Board or cities' fire departments working under their own local ordinances. These local agencies look to Board staff for consultation on the adequacy of investigative and remedial proposals, guidance on cleanup requirements and concurrence on case closure decisions. Staff will provide guidance to the local agencies which oversee soil and groundwater cleanups regarding the new direction of the program. We will conduct initial meetings with the local agencies regarding the designation of "low-risk" cases, and will work closely with them to ensure that all LUFT case files are progressively evaluated for possible closure or a shift from active remediation to ongoing monitoring.

**RECOMMENDATION:**

Staff recommends that the Board accept the approach outlined above regarding the definition of and management of "low-risk" LUFT cases.

**Exhibit O**



4. When I was first hired at the Carter Plant, it was owned by Mr. Carter, but shortly thereafter he sold the plant to ITT. The plant was then operated as the J.C. Carter Company Division of ITT.

5. I was first hired at the Carter Plant to work on the machine shop drill press line. I later worked in the tool crib, and then as a test technician in both the aerospace and industrial marine ("IM") divisions.

6. The property occupied by the Carter Plant is currently almost entirely paved. That was not always the case. When I first began to work at the Plant, only the front (north) portion of the plant was paved. The back (south) portion of the property was an open field. Once the current aerospace test facility was constructed in the 1973-1974 time period, that facility was an isolated paved area connected to the rest of the Carter Plant by a single road. In fact, before I worked at the Carter Plant, when I was in high school, I used to ride my road bike on the unpaved portions of the property, as did other people.

7. During the time ITT owned the Carter Plant, ITT used trichloroethylene ("TCE"), which was commonly referred to as "trike," on the property.

8. ITT used TCE as a cleaning solvent. It used TCE to clean parts. The TCE was used in several degreasers on the property. One was a "vapor degreaser", which was first located in the southeast corner of Building 7. I have marked with an "x" the location of this degreaser on the map of the Carter Plant attached as Exhibit 1 to this affidavit, which reflects the buildings on the property as of the late 1970's. This area of the plant was a "clean room" used to clean aerospace parts very thoroughly. The vapor degreaser was later moved to the building I have drawn onto the property to the southwest of Building 12. The building was at one time the location of the structure currently designated as Building 8. I have indicated with an "x" the location of the degreaser in that building. ITT also used TCE in another degreaser in the location

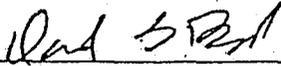
of the current Building 12, which was then not a building but an outdoor concrete slab. I have indicated with an "x" the location of the degreaser on that slab. This area was also referred to as a "clean room," although it was not an enclosed room at the time.

9. TCE was not handled with great care during the period of ITT ownership. Knowing how it was handled, I believe it was spilled at various locations on the property and that it was probably disposed of on the back portion of the property over the chain link fence.

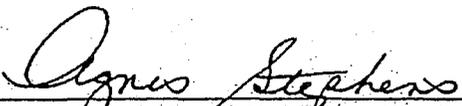
10. During ITT ownership, the Carter Plant also had a number of "test pits" in the ground in which various products were tested. One of these test pits was known as the "Old Swimming Pool." It contained water and was used for the testing of submersible pumps. Any residual TCE on the products tested in the pool would have entered the water. A picture of the Old Swimming Pool is attached as Exhibit 2 to this affidavit. The Carter Plant also contained other test pits in which products were tested. The function of these other pits was to contain spills or leaks from the testing process, which occurred regularly.

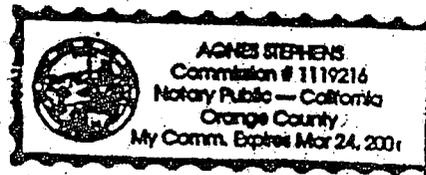
11. Once Building 9 was constructed, sometime after August 1972, dirty used TCE was stored in a concrete underground sump behind Building 9, in what is now the covered inspection staging area. The sump had a large manhole-size opening into which the TCE and used oil was poured.

12. The Carter Plant stopped using TCE before 1978. Since that time, to the best of my knowledge, the Carter Plant did not use, spill, or dispose of TCE.

  
\_\_\_\_\_  
DAVID S. BEARD

Subscribed and sworn to before me this  
10th day of August 2000

  
\_\_\_\_\_  
Agnes Stephens, Notary Public

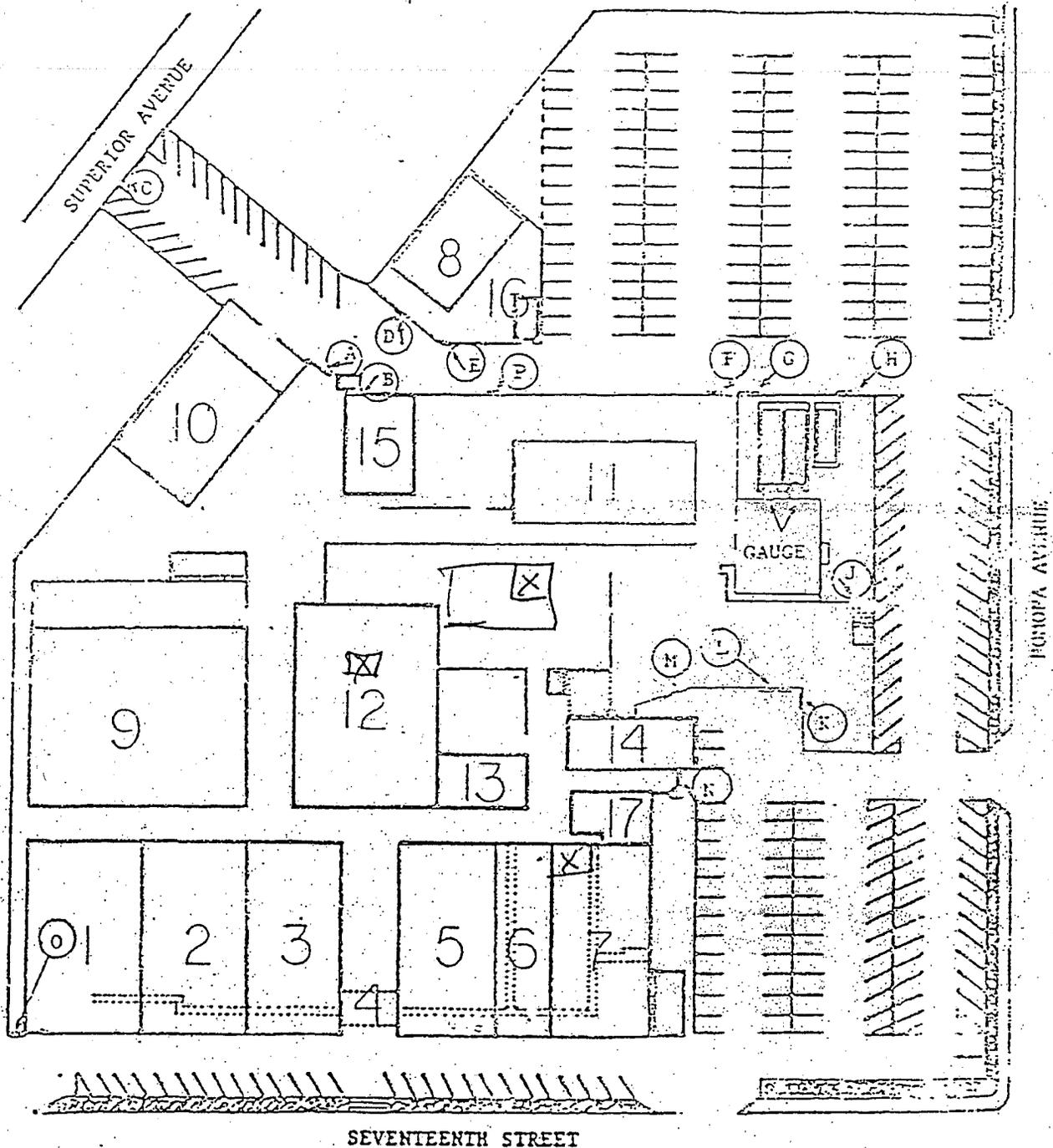


My commission expires: March 24, 2001

**Exhibit O, tab 1**



# GATE LOCATIONS



**J. C. CARTER CO**  
A DIVISION OF ITT

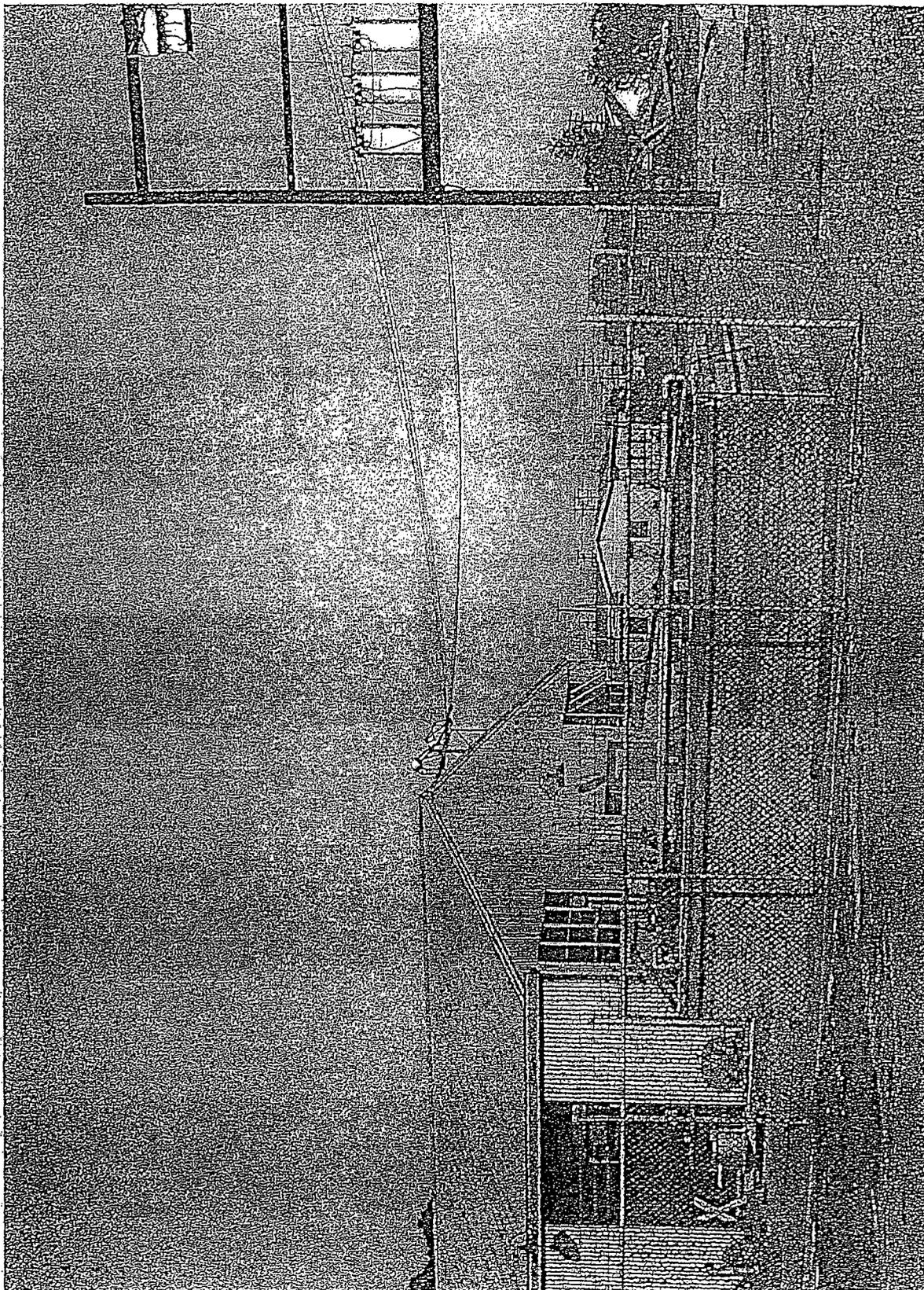


NORTH

C

**Exhibit O, tab 2**

C



CWTDCLIB341258.1



# **Exhibit P**



5. During the time ITT owned the Carter Plant, ITT used trichloroethylene ("TCE"), which was commonly referred to as "trike," on the property.

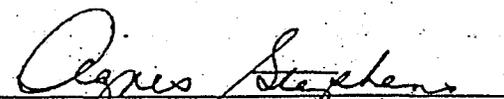
6. ITT used TCE as a cleaning solvent. It used TCE to clean parts. I remember TCE because it was particularly effective at degreasing and also had a distinctive odor. TCE was used in various locations on the property. One location was a "slosh pan" or degreaser into which parts were dunked, in the "deburring area" behind (south of) Buildings 1 and 2. I also remember a degreaser in the assembly area in Building 12, along the back wall. In addition, ITT had several portable vapor degreasers that were moved from place to place as necessary.

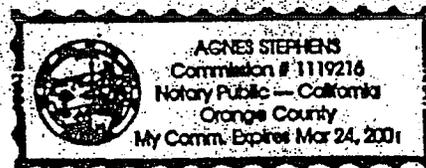
7. At ITT, as was common during the late 1970's, TCE was not handled with great care. Everyone had a fairly cavalier attitude about its use. During that time period, I remember seeing people at the Carter Plant removing parts from the degreasers and then shaking off the parts to remove excess TCE.

8. The Carter Plant stopped using TCE before I left the Carter Plant in 1985. Since that time, to the best of my knowledge, the Carter Plant did not use, spill, or dispose of TCE.

  
MICHAEL T. PETROZZI

Subscribed and sworn to before me this  
10th day of August 2000

  
Agnes Stephens, Notary Public



My commission expires: March 24, 2001

C

**Exhibit Q**



transferred to become the foreman in the Industrial Marine ("IM") machine shop, before I transferred to spare parts sales in 1986.

5. The property occupied by the Carter Plant is currently almost entirely paved. That was not always the case. When I first began to work at the Plant, only the front (north) portion of the plant was paved. The back (south) portion of the property was an open field. Once the current aerospace test facility was constructed in the 1973-1974 time period, that facility was an isolated paved area connected to the rest of the Carter Plant by a single road.

6. During the time ITT owned the Carter Plant, ITT used trichloroethylene ("TCE"), which was commonly referred to as "trike," on the property.

7. ITT used TCE as a cleaning solvent. It used TCE to clean parts. I personally used TCE at the Carter Plant to clean parts while ITT owned it. TCE was used in tubs and open buckets and parts were dipped into the tubs and buckets for cleaning. In particular, I remember the cleaning of ball bearings with TCE.

8. When I worked in the machine shop, it was located first in building 1 and, later in building 9.

9. Immediately behind (south) of Building 1, there was a degreaser in which heated TCE was used to clean parts during the period of ITT ownership. When the TCE became dirty, it was removed by other employees and I do not know what happened to it.

10. The Carter Plant stopped using TCE sometime in the late 1970's. Since the late 1970's, to the best of my knowledge, the Carter Plant did not use, spill, or dispose of TCE.



# CADWALADER

*Cadwalader, Wickersham & Taft*

1201 F Street, N.W., Suite 1100  
Washington, D.C. 20004  
Tel: 202 862-2200  
Fax: 202 862-2400

New York  
Washington  
Charlotte  
London

Laurence S. Kirsch  
Direct Dial: 202-862-2317  
Internet: LKirsch@cwvt.com

March 27, 2001

**VIA TELECOPY:**

Ms. Rose Scott  
Pollutant Investigation Section  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3339

Re: Cleanup and Abatement Order No. 90-126  
J.C. Carter Company, Inc.  
Case No. 083000202T

Dear Ms. Scott:

Thank you for the time you spent meeting with me on March 15. I am writing to correct three very important misimpressions on behalf of the Regional Board that emerged at our meeting. It appears that each of these misimpressions plays a significant role in the Regional Board's decisionmaking concerning the property located at 671 West Seventeenth Street in Costa Mesa, California ("Property") currently owned by J.C. Carter Company, Inc. ("Current J.C. Carter"). The misimpressions emerging at the meeting and the facts concerning these issues are summarized below:

1. **Misimpression:** Current J.C. Carter owned and operated an underground cutting oil storage tank on the Property that was subsequently removed. In our meeting, you advised that this issue was the reason the Board was not willing to remove Current J.C. Carter as the primarily responsible party under the Cleanup and Abatement Order.

**Fact:** Current J.C. Carter neither owned nor operated the underground storage tank. The underground tank at issue on the Property was removed before Current J.C. Carter acquired the Property from Armatron

International, Inc. ("Armatron").<sup>1</sup> The documents attached show that the tank was removed in *March 1986* (see Attachment A).

Current J.C. Carter was not even formed as a corporation until *September 1986* (Attachment B) — *six months after* the tank was removed.<sup>2</sup> Current J.C. Carter did not acquire the Property from Armatron until *January 1987* — *nine months after* the tank was removed. Because Current J.C. Carter *did not exist or own the Property* at the time the tank was pulled, it could not have been the owner or operator of the tank.

The confusion appears to be caused by the fact that the prior owner of the property — the company that did own and operate the tank — was an entirely separate company also known as J.C. Carter Company, Inc. This was the company under the ownership of Armatron, however, and is not the same company as Current J.C. Carter. As set forth above, the Current J.C. Carter did not exist when the tank was removed.

Because Current J.C. Carter neither owned nor operated the underground storage tank, and because Current J.C. Carter did not contribute in any way to the substances present in the ground at the Property, it is appropriate that the former property owners and not Current J.C. Carter be held solely responsible for addressing these substances.

2. **Misimpression:** Mr. Veloz indemnified prior owners for the cost of addressing substances at the Property.

**Fact:** As we discussed, Mr. Veloz did not indemnify either of the prior owners, ITT Corporation nor Armatron. Rather, Mr. Veloz is representing the interest of Current J.C. Carter — the current owner of the Property — which neither caused nor contributed in any way to the substances present in the ground at the Property.

3. **Misimpression:** Current J.C. Carter had not previously provided the Board with addresses for ITT or Armatron that the Board could use for notice

---

<sup>1</sup> As previously documented in a report submitted to the Board in December 1990, a copy of which was submitted as Exhibit B to the Board in August 11, 2000 submission, Current J.C. Carter did not even purchase or use trichloroethylene ("TCE"), the substance formerly contained in the tank and now at issue in groundwater.

<sup>2</sup> Current J.C. Carter was initially incorporated as "JCC Acquisition Corp." After the acquisition, JCC Acquisition Corp. changed its name to J.C. Carter Company, Inc. See Attachment B. This procedure is the common one employed in asset acquisition transactions.

Ms. Rose Scott  
March 27, 2001  
Page 3

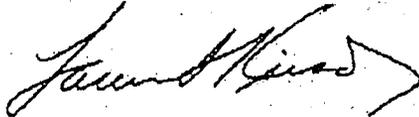
letters. This was the reason given for the Board's failure to put these parties on notice previously.

Fact: Current J.C. Carter provided those addresses to the Board in a letter from Delta Environmental dated December 3, 1990. That letter was resubmitted under cover of our August 11, 2000 petition. Therefore, as I pointed out at our meeting, Current J.C. Carter has been performing under the Order for the last *eleven years* while waiting for the Board to name the parties who properly bear responsibility.

As discussed at our meeting, the evidence is quite compelling that the environmental conditions that have been addressed at the property were caused solely by ITT and/or Armatron. These conditions have nothing to do with Current J.C. Carter or its operations, and over the past eleven years Current J.C. Carter has done far more than should be required of it.

We would very much appreciate if you would consider directing any further requirements with regard to the Property solely to ITT and Armatron. If you have any further questions, please feel free to contact me.

Sincerely,



Laurence S. Kirsch  
Counsel to Robert L. Veloz  
(representing the interests of J.C. Carter Company, Inc.)

cc: Mr. Robert L. Veloz  
Mr. A. L. Simmons

# Attachment A

CLIENT'S COPY

ORANGE COUNTY HEALTH CARE AGENCY  
HEALTH SERVICES ORDER

1. No. **010959**

2. DATE: **2-12-86**

TELEPHONE #

(Please Print or Type)

3. CLIENT NAME: **J. C. CARTER CO.**

TELEPHONE #

4. PAYOR'S NAME: **GEMIN (EISA) CO.**

TELEPHONE #

STREET: **1071 W. 11th St.**

CITY, STATE, ZIP CODE: **COSTA MESA**

STREET: **5472 CHERYL LEE LANE**

CITY, STATE, ZIP CODE: **VERA LIND**

5. CLIENT #

6. NEW CLIENT  RETURNING CLIENT

7. REPORTING UNIT: **HAZ. WASTE**

8. CASHIER'S USE ONLY:

9. PRINT PREPARER'S NAME: **NN** **CL # 2136**

10. Write in Code # for Service(s): Write in amount if variable fee:

CODE #	CHECK <input checked="" type="checkbox"/> CASH	AMOUNT
013	253-	\$
TOTAL COST	AMOUNT PAID <b>32</b>	AMOUNT TO BE BILLED

11. BATCH # | 12. INVOICE #

13. PLAN CHECK NUMBER: **10-05**

14. ACCOUNTING INFORMATION:

15. CASHIER'S INITIALS OR SIGNATURE:

16. COMMENTS: **REMOVE 1 TANK**

SUPERVISOR'S SIGNATURE IF REFUND:

18. SIGNATURE OF PERSON RECEIVING REFUND:

COSTA MESA FIRE DEPARTMENT  
APPLICATION FOR PERMIT

JUL 1

PERMIT FEE: \$15.00. Make checks payable to City of Costa Mesa. This application and fee should be mailed or brought to the Finance Department (Room 106, City Hall, 77 Fair Drive), P. O. Box 1200, Costa Mesa, CA 92626.

Business Name J. C. CARTER Co.  
Mailing Address 671 W. 17th St, Costa Mesa  
Permit Address (if different) Same  
Person to Contact JACK GRIFFIN Phone 538-6525  
Description of Type of Business: VALVE MANUFACTURING  
Are Other Fire Department Permits in Effect for Premises? If so, list numbers.  
NO

Section(s) of Fire Code Requiring Permit(s). (See Permit Requirements)

Describe what is to be done and list all hazardous materials and the maximum quantities to be on hand.

Removal of 2000 gal.  
cutting oil TANK. (underground)  
(20 parts water to 1 part oil)

Date: 3-5-86 Applicant's Signature [Signature]

Fire Department Use Only

Place of Assembly Occupant Load \_\_\_\_\_

Building Construction Suitable for Occupancy \_\_\_\_\_

TYPE OF MODIFICATION

FACILITY LOCATION (54611)

Indicate Type & Number

1 Closure(s)      System Modification(s)  
Repair(s)      Other(Specify)       
Transfer     

Name J.C. CARTER Co.  
Street 671 W. 17th St  
City/Zip Costa Mesa, 92627

NOTE: CLOSURES, REPAIRS & SYSTEM MODIFICATIONS OF UNDERGROUND STORAGE TANKS REQUIRE THE SUBMITTAL OF (4) SETS OF PLANS TO THIS DIVISION. THESE PLANS MUST BE APPROVED PRIOR TO THE INITIATION OF ANY CONSTRUCTION OR MODIFICATIONS.

ACTIVITY DESCRIPTION Remove 2000 gal. underground  
cutting oil tank, oil mixed with  
20 parts water to 1 part oil.

FACILITY OPERATOR

CONTRACTOR (IF APPLICABLE)

J.C. CARTER Co.  
Name (Please Print)  
671 W. 17th St.  
Street  
Costa Mesa, Ca 92627  
City St. Zip  
548-3421  
Telephone

GRIFFIN Construction  
Company Name  
5472 Cherry Lee Lane  
Street  
Yorba Linda, Ca 92686  
City St. Zip  
JACK GRIFFIN 714-538-15  
Contact Person Telephone

CURRENT TANK OWNER

J.C. CARTER Co.  
Name (Please Print)  
671 W. 17th St.  
Street  
Costa Mesa, Ca 92627  
City St. Zip  
Ken Cripps 548-3421  
Contact Person Telephone

JACK L. GRIFFIN  
Name of Applicant (Please Print)  
Jack L. Griffin  
Signature of Applicant  
3-12-86  
Date

SECTION BELOW MUST BE COMPLETED FOR PERMIT TRANSFER

NEW TANK OWNER (IF TRANSFER)

PERMIT OBLIGATIONS ACCEPTANCE STATEMENT

Name (Please Print) \_\_\_\_\_  
Street \_\_\_\_\_  
City St. Zip \_\_\_\_\_  
er/Authorized Representative (Please Print) \_\_\_\_\_  
Signature of Owner/Authorized Representative \_\_\_\_\_ Date \_\_\_\_\_

"The undersigned transferee has reviewed the conditions of the Permit and agree to accept all of the obligations stipulated on the Permit to Operate which has been issued to the facility indicated above."

OFFICE USE ONLY

PERMIT # \_\_\_\_\_ PLAN CHECK # \_\_\_\_\_  
FEE \_\_\_\_\_ APPROVED BY [Signature] DATE 3-11-86



CITY OF COSTA MESA  
FIRE DEPARTMENT

005407

PERMIT

NON TRANSFERABLE

Permit Granted March 19, 19 86

PERMISSION IS HEREBY GRANTED:

To Expires March 20 19 86

TO: J.C. CARTER CO.,

Address 671 N. 17th Street, Costa Mesa

To Remove 2000 gallon underground tank in accordance with the Uniform Fire Code, Section 79.113, A through F.

At 671 N. 17th Street, Costa Mesa, California

In accordance with the terms of application on file with the City of Costa Mesa Fire Department, and subject to provisions of the City of Costa Mesa Fire Code and the Municipal Code of this City.

JOHN P. PETRUZZIELLO, Fire Chief

THIS PERMIT MUST BE POSTED CONSPICUOUSLY  
ON THE DESIGNATED PREMISES OR EQUIPMENT

By Margaret Lindner  
Fire Inspector

COUNTY OF ORANGE  
EPA/ENVIRONMENTAL HEALTH  
PROPOSITION 65  
NOTIFICATION REPORT  
(714) 834-8402

PROP. 65 ID#

DART CASE ID# 8647

DATE REPORTED: 4-6-90 TIME: DESIGNATED EMPLOYEE REPORTING: WEAAT PROPT

REPORT SUBMITTED ON BEHALF OF ALL DESIGNATED EMPLOYEES OF WEAAT AGENCY: OCHCA/ENVIR. HEALTH

DATE OF INCIDENT: 4-6-90 TIME: SOURCE OF INFORMATION: LUST FILE

INCIDENT LOCATION: J.C. CARTER 171 17TH ST COSTA MESA

DEA ADDRESS CITY

92627 (714) 5483421 STEVE EISENBERG

ZIP SITE TELEPHONE CO. CONTACT PERSON

DESCRIPTION/CAUSE OF INCIDENT:

A CUTTING OIL TANK WAS PULLED 3-79-86 SOIL SAMPLES

TAKEN & ANALYZED IDENTIFIED SIGNIFICANT CONTAMINATION

WORK DONE SINCE THEN HAS IDENTIFIED GROUND WATER

CONTAMINATION

RESPONSIBLE PARTY NAME: J.C. CARTER SEE ABOVE TELEPHONE: ( )

IDENTIFICATION OF DISCHARGED WASTE:

CHEMICAL NAME/COMMON NAME	PHYSICAL STATE	VOLUME	HAZARDOUS PROPERTIES/LEGAL LIMITS
TOLUENE, XYLENE, BENZENE	LIQ/VAPOR	UNK	TOXIC, FLAMMABLE
PERCHLOROETHYLENE			EXPLOSIVE, BENZENE

FIELD DATA/TAB RESULTS (INDICATE SOIL, GROUNDWATER, ETC.): A KNOWN CARCINOGEN

SEE ATTACHED

FROM MOST RECENT SOIL REPORTS

ENVIRONMENT AFFECTED: ROADWAY GROUNDWATER SEWER OR STORM DRAIN LAKE/STREAM/RIVER BAY/OCEAN

AIR SOIL FLOOD CHANNEL GROUND (PAVED) OTHER

LOCALE: RESIDENTIAL COMMERCIAL INDUSTRIAL OPEN AREA PUBLIC PROPERTY PRIVATE PROPERTY R

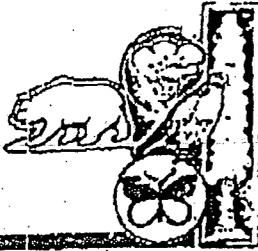
DESCRIPTION OF EXTENT OF CONTAMINATION (LATERAL AND VERTICAL):

NOT UNKNOWN



11-11-10 10:10 AM 10/11/10 10:10 AM 10/11/10 10:10 AM

# Attachment B



# State of California

OFFICE OF THE SECRETARY OF STATE

I, **MARCH FONG EU**, Secretary of State of the State of California, hereby certify:

That the annexed transcript has been compared with the record on file in this office, of which it purports to be a copy, and that same is full, true and correct.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this

SEP 22 1986



*March Fong Eu*

Secretary of State.

03/26/01 MON 18:12 FAX

FROM LATHAM & WATKINS

619-696-7419

(MON) 3.26'01 15:59/15:58/NO. 4861919846 P 3

003

1542236

ENDORSED  
FILED

In the office of the Secretary of State  
of the State of California

SEP 22 1986

ARTICLES OF INCORPORATION  
OF  
JCC ACQUISITION CORP.

ONE: The name of this corporation is JCC  
Acquisition Corp.

TWO: The purpose of this corporation is to engage  
in any lawful act or activity for which a corporation may be  
organized under the General Corporation Law of California  
other than the banking business, the trust company business,  
or the practice of a profession permitted to be incorporated  
by the California Corporations Code.

THREE: The name and address in this state of this  
corporation's initial agent for service of process is  
Kenneth M. Poovey, Esq., 701 B Street, San Diego, CA  
92101-8197.

FOUR: The total number of shares which this  
corporation is authorized to issue is 1,000.

Dated: September 19, 1986.

*Margery Hintersman*  
Margery Hintersman,  
Incorporator

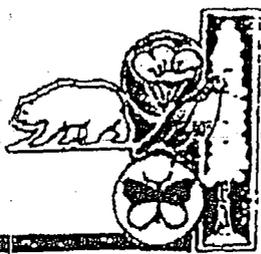
I declare that I am the person who executed the  
above Articles of Incorporation, and such instrument is my  
act and deed.

*Margery Hintersman*

MCR200

MAR 26 2001 14:27

CONF 07



# State of California

OFFICE OF THE SECRETARY OF STATE

## CORPORATION DIVISION

I, *MARCH FONG EU*, Secretary of State of the State of California, hereby certify:

That the annexed transcript has been compared with the corporate record on file in this office, of which it purports to be a copy, and that same is full, true and correct.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this

JAN 27 1937



*March Fong Eu*

Secretary of State