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TRANSMITTAL

TO: Mr. Scott Seery
Alameda County Health Care Services
80 Way, Room 200
Oakland, California 94621

DATE: January 29, 1993
PROJECT NUMBER: 60006.04
SUBJECT: ARCO Station 6041, 7249 Village Parkway, Dublin, California

FROM: Barbara Sieminski
TITLE: Assistant Project Geologist

WE ARE SENDING YOU:

COPIES	DATED	NO.	DESCRIPTION
1	1/29/93	60006.04	Final- Additional Onsite Subsurface Investigation and Vapor Extraction Test at ARCO Station 6041, 7249 Village Parkway, Dublin, California.

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Mr. Richard Hiett, RWQCB, San Francisco Bay Region
Mr. Joel Coffman, RESNA Industries Inc.

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agencies will review and approve the work plan within one month of receipt. The estimated remediation schedule for this site will be delayed if review of the RAP is delayed or, if after review of the RAP, the regulatory agencies involved have comments and require submittal of a revised RAP. The estimated schedule also assumes that completion of offsite investigation will not affect the remediation schedule.

4). PRELIMINARY AND DETAILED ENGINEERING DESIGN

The estimated schedule shows that preliminary design will be completed and submitted to the involved regulatory agencies with the RAP. The preliminary design assumes that only onsite remediation is needed. Preliminary design consists of analyzing site characterization data collected to date and developing a cost-effective conceptual design. The conceptual design consists of specifying the proposed vapor and groundwater extraction systems, the treatment system (type of abatement and location of remediation compound), and development of the process flow diagram (PFD). This information is used for environmental permitting and final design. Since no vapor extraction or aquifer pump test data exists, selection of the anticipated treatment technology's for soil and groundwater remediation have not been made.

Work under the detailed engineering design includes: engineering calculations; bill of materials; preparation of Plans and Specifications, including site and remediation compound layouts; trench and section details; process and instrumentation diagram (P&ID) and a one line electrical diagram; in-house plan check and review; and one set of revisions to the Plans and Specifications by ARCO. Once the Plans and Specifications are finalized, planning and building permits are applied for and bids solicited from qualified contractors.

5). PERMITTING

Typically two types of permits are required for installation of the proposed soil and groundwater remediation systems; environmental, and planning and building permits. Environmental permits include: an Authority to Construct and Permit to Operate from the governing Air Board for systems where organic vapor emissions are likely

(oil-water separators, aeration tanks, carbon (vapor phase), air strippers, and thermal or catalytic oxidizers); and a Wastewater Discharge Permit from the RWQCB or the local Publicly Owned Treatment Works (POTW) for discharge of treated effluent from the proposed groundwater remediation system to the storm drain or local City sewer.

The air and wastewater discharge permit applications can be sent when the soil and groundwater remediation equipment has been identified during preliminary design. The governing Air Board has 60 days to issue the permit (Authority to Construct) or request additional information. If a resubmission of the permit application is required, there will be an additional delay of up to 30 days. Once operation of the remediation system has been initiated, a letter requesting a Permit to Operate is sent to the Air Board. The permit is received with 60 days, although the system can be in operation during this time.

Based on aquifer testing data, the average and maximum expected groundwater extraction flow rates and influent hydrocarbon concentrations will be determined. If the local POTW will accept treated effluent water from the groundwater remediation system, a wastewater discharge permit will generally granted within 30 days of submittal of the completed permit application. Communications are less formal than with the RWQCB and questions, comments, and additional requirements can usually be handled by telephone or fax without significant delays.

However, if the local POTW will not accept the discharge, a National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB will be required. For cleanups at service stations, the RWQCB has initiated an NPDES permit program where a permit application can be approved within three to four months of submission. An encroachment permit from the City will also be required for sites where groundwater discharge goes to a storm drain in the City right of way.

Planning and building permits include submission of the complete set of Plans and Specifications to the local City Planning Building and Fire Departments for approval, prior to construction and installation of proposed remediation systems. These permits are typically granted within 30 days of receipt of the Plans and Specifications.

Questions, comments and additional requirements are usually handled informally by visits, telephone, or fax. A Hazardous Materials Management Plan (HMMP) is required to be submitted to the City Hazmat Department or Fire Department if hazardous materials are to be stored on site (such as oil-water separators and above ground product storage tanks). This is submitted at the same time the building permit is applied for if necessary, and should be approved within the 30-day time frame.

The permitting schedule assumes that permitting can be completed within four to six months, provided encroachment permission, if required, is not delayed, and agencies do not require design changes which necessitate additional permitting.

6). EQUIPMENT SELECTION AND PROCUREMENT

After engineering design is completed, a bid package will be prepared for submittal to construction contractors (a minimum of three). Contractor bids will be evaluated and a contractor shall be selected within one week of receiving the bids. Our consultant will then provide ARCO with an equipment list. ARCO orders equipment directly from the vendor. The schedule assumes that all equipment is available and can be delivered within four weeks, and that involved regulatory agencies approve of selected equipment.

7). SYSTEM CONSTRUCTION AND STARTUP

Upon approval of the RAP, having secured local City Building, Fire, and Planning permit(s), after equipment procurement, and on selection of a general contractor, systems installation will commence in accordance with the approval Plans and Specifications.

System installation will include: construction of utility trenches to contain all necessary water, vapor, and electrical lines; installation of necessary underground pipes and electrical conduits to and from the proposed remediation compound; pressure testing lines for leaks; City inspection of utility trenches prior to closure; construction of the remediation compound; electrical service and sewer hookups; and installation and plumbing of all soil and groundwater remediation equipment.

The schedule assumes that construction will not be delayed by inclement weather, negotiations with lessor, and delays in utility installation.

After completion of system installation, operation of the proposed soil and groundwater remediation system will be initiated in compliance with all applicable regulatory agencies. Startup procedures will include daily system monitoring, maintenance, sampling, analysis of system influent and effluent as required by the site specific environmental permits.

8). SYSTEM OPERATION AND MAINTENANCE

Systems operation and maintenance includes: site visits once every week of the first month; once every two weeks for the next month; and monthly visits for the

remainder of the life of the remediation system. Site inspections will include: monitoring and adjustment of system parameters to optimize soil and groundwater remediation system efficiencies; periodic sampling and analysis of influent and effluent to the remediation systems as required by the environmental permits; other periodic maintenance procedures including inspection and cleaning of all lines, process equipment, etc.; and monthly (or as required), reporting of results of systems operations to involved regulatory agencies.

The schedule assumes that soil remediation can be completed in one year, groundwater remediation can be completed within three to six years, it is technically feasible to achieve State cleanup levels, no offsite wells are needed to complete remediation; and no significant equipment breakdowns occur.

The progress and expected duration of the soil and groundwater cleanup is dependent on physical and chemical factors such as: fluctuating groundwater levels both naturally and/or artificially induced (pumping of other wells near the site), and the correlation of data from specific points (wells and borings) with the actual conditions across the site. Variations in site geology and transmissivity of the aquifer may have an affect on the groundwater remediation schedule. Chemical factors such as the absorption potential of gasoline to soil can also affect the schedule for soil remediation. Duration of cleanup can be more accurately predicated after a performance evaluation on the system has been completed.

9). PERFORMANCE EVALUATION

Yielded well capture zones, vapor extraction flow rates, radius of influence, influent and effluent analytical data are reviewed to evaluate the efficiencies of the soil and groundwater remediation systems. On the basis of this evaluation, it may be necessary to add new vapor or groundwater extraction wells and/or adjust treatment system parameters. Additional wells may be desirable if the yielded zones of capture do not overlap to provide additional removal capability and/or to cost effectively speed up site cleanup.

The schedule assumes that the performance evaluation will show that the remediation system(s) will effectively remove hydrocarbons from areas of impacted soil and groundwater and will reduce extracted concentrations significantly over time. It also assumes that additional on or offsite vapor and groundwater extraction wells are not required to effectively remediate impacted areas, once the treatment system is operational.

10). SYSTEM SHUTDOWN: SOIL REMEDIATION SYSTEM

Based on our consultant's experience, hydrocarbons concentrations in the soil can be significantly reduced to currently known State cleanup levels at most sites in approximately one year. After reviewing historical soil-vapor data collected from the extraction wells during system operation, the remediation system will be shut down after agency concurrence.

11). SYSTEM SHUTDOWN: GROUNDWATER REMEDIATION SYSTEM. BEGIN ONE-YEAR VERIFICATION MONITORING

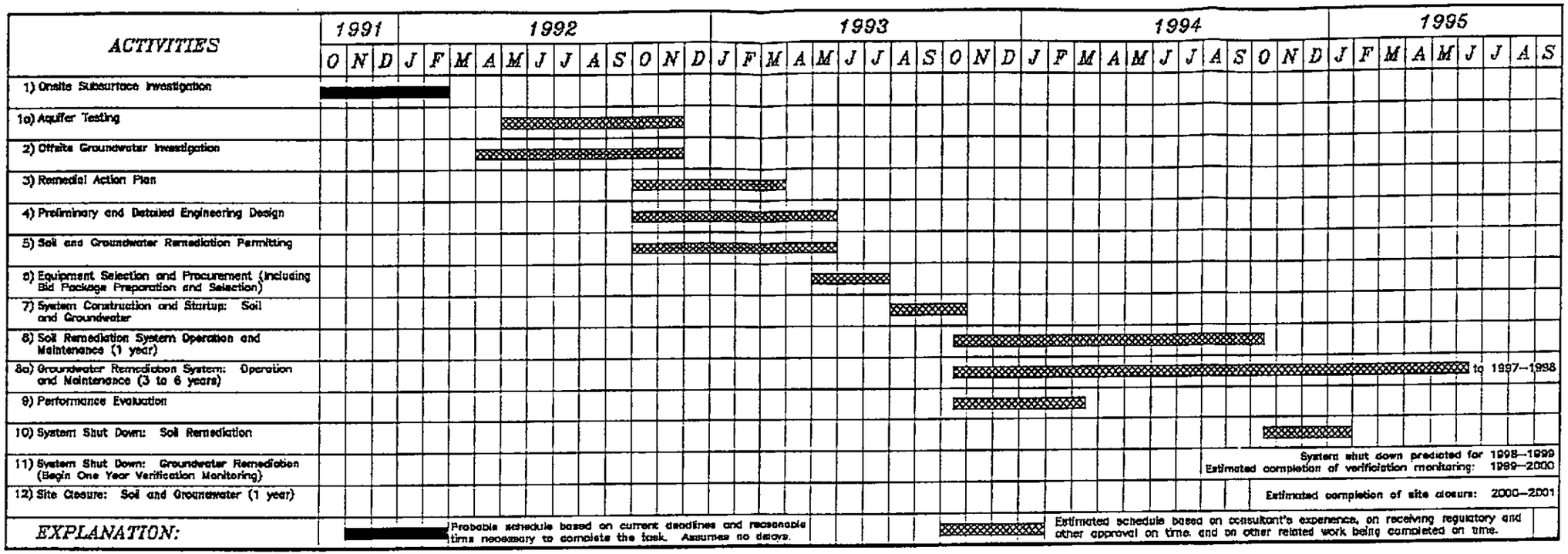
The groundwater remediation system will be shut down when analytical data from impacted wells show that hydrocarbon concentrations have been reduced significantly and are below currently known agency-prescribed cleanup levels and after agency concurrence. Based on current regulations, the groundwater must be monitored for a minimum of one year to verify cleanup, prior to applying for site closure.

The schedule assumes that cleanup will be completed three to six years after startup and only one year of verification monitoring is required.

12). SITE CLOSURE

Site closure is typically granted after an extensive RWQCB review of all historical data at the site. Closure involves cleanup of both soil and groundwater and is not addressed independently. To verify cleanup of previously impacted soil, verification borings will be drilled and samples collected and analyzed to shown that the soil has been remediated below State cleanup levels. To verify groundwater cleanup, verification monitoring data will be reviewed.

The schedule assumes that site closure involves only drilling of confirmation borings, confirmation of verification monitoring data and that no risk assessment will be required. It also assumes that site closure is dependent on agency concurrence within one year following completion of verification monitoring.



1 and 1a) Onsite Subsurface Investigation:
- Preliminary investigation initiated September 1991
- Results to be summarized in report to ACHCSA and RWQCB, February 1992
- Aquifer testing (if necessary) to follow initial offsite investigation

2) Offsite Groundwater Investigation:
- Workplan to be submitted for initial offsite investigation in March 1992
- It has often taken up to 4 to 8 months to gain offsite access and encroachment permits
- Proposed offsite investigation will delineate offsite hydrocarbon plume

3) Remedial Action Plan:
- It is anticipated that the ACHCSA can review and approve the remedial action plan (RAP) in one to two months
- No RAP revisions are necessary
- No changes to design after regulatory comments
- A vapor extraction test will be conducted (if necessary)
- Completion of offsite investigation will not impact onsite remediation schedule

4) Preliminary and Detailed Engineering Design:
- Soil and groundwater remediation design basis from pre–1992 and post–1992 data
- Only onsite remediation needed

5) Permitting (Soil and Groundwater):
- It is anticipated that permitting can be completed within 4 to 5 months
- No design changes necessitating additional permitting, including modification of treatment system

6) Equipment Selection and Procurement:
- All equipment is available from stock up to 4 to 6 weeks
- Selected equipment approved by ACHCSA

7) System Construction and Startup:
- No delays due to weather
- No delays due to negotiation with property owners
- No delays due to utility installation

8 and 8a) System Operation and Maintenance:
- It is anticipated that groundwater remediation can be completed within 3 to 6 years
- It is technically feasible to achieve cleanup levels
- No offsite remediation will be necessary
- No significant equipment breakdowns

9) Performance Evaluation:
- Evaluation shows that system will effectively remove hydrocarbons from soil and groundwater impacted areas and will reduce concentrations significantly over time
- Evaluation shows that additional vapor and groundwater extraction wells are not required to effectively remediate impacted areas once the treatment system is operational

10) Shut Down of Soil Remediation System:
- Cleanup will be completed in approximately 1 year after startup

11) Shut Down of Groundwater Remediation System:
- Cleanup will be completed 3 to 6 years after startup
- Only one year of verification groundwater monitoring will be required before site closure can be initiated

12) Site Closure: Soil and Groundwater:
- Requirements for soil closure involve only drilling of confirmation borings and performance evaluation at time of system shutoff
- Requirements for groundwater closure involves only groundwater monitoring and performance evaluation at system shutoff
- Closure dependent on agency concurrence within 1 year following completion of verification monitoring
- No risk assessment will be required

Note: Obtaining nondetect levels in groundwater and "low–level" cleanup levels in soil may not be technically feasible.

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ESTIMATED SOIL AND GROUNDWATER REMEDIATION IMPLEMENTATION SCHEDULE
ARCO Station 6041
7249 Village Parkway
Dublin, California

PLATE
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PROJECT 61078.01 | *Revision 1, 01/22/92*