

ANANIA GEOLOGIC ENGINEERING

August 7, 1989

Ms. Katherine Chesick
Alameda County Health Department
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

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BOARD

Subject: Work Plan for Off-Site Exploration, Carnation Dairy Facility, Located at 1310 14th Street, Oakland, CA

AGE Project No. 004-88-059

Dear Ms. Chesick:

The following work plan presents our purpose, scope of services and methodology for the Off-Site Exploration related to the fuel tank area at the Carnation Dairy Facility in Oakland, California.

Anania Geologic Engineering (AGE), acting as the environmental agent for the Carnation Company, is currently in the process of conducting remediation measures and a continuing subsurface investigation program to evaluate aquifer characteristics and the extent of soil and groundwater hydrocarbon contamination on the Carnation Facility. Preliminary data indicates the hydrocarbon contaminant plume may extend north of the property. To further define the extent of possible off-site contamination the following work plan is presented.

1.0 PURPOSE

The off-site characterization described in this work plan has the following objectives:

- 1) Determine the lateral and vertical extent of fuel contamination in the soil and groundwater, if present, north of the facility by sampling the soil and groundwater;
- 2) Evaluate, if encountered, the thickness and lateral extent of free product floating on the groundwater; and

- 3) Determine the lithology and lateral extent of stratigraphic units immediately north of the facility.

1.2 Scope of Work

Our scope of services within this work plan will include drilling at least 6 borings at selected locations, within and adjacent to, 16th Street. Approximate boring locations are shown on Figure 1. A continuous log will be maintained during drilling and representative samples will be obtained at selected depths to develop stratigraphic information. Soil samples will be collected at five foot intervals. Samples will be submitted to a California state certified laboratory, using DOHS and EPA sampling protocol and Chain of Custody procedures. Selected samples will be tested for total petroleum hydrocarbons (TPH) benzene, toluene, ethylbenzene and xylene (BTEX), oil and grease, lead, volatile organics, semi-volatile organics and PCB's as subsequently described.

Following completion of the drilling, test borings will be converted to monitoring wells. Monitoring wells will be developed and sampled to evaluate, if encountered, the lateral extent of off-site groundwater contamination.

1.3 Schedule

AGE has applied for minor encroachment and excavation permits with the City of Oakland Department of Public Works, and well permits with the Alameda County Flood Control District, Zone 7, and are awaiting authorization to proceed. AGE anticipates starting work off-site on August 1, 1989.

We will notify the Alameda County Health Department 48 hours prior to beginning our exploration program. A factual report of findings will be submitted after receipt of analytical results for the soil and groundwater samples. This report will describe the drilling operations, well installation, well development, soil and groundwater sampling protocol, conclusions, and recommendations including future groundwater sampling and water level monitoring schedules. If encountered, off-site definition, as best as can be determined from this scope of work, will be addressed.

2.0 BACKGROUND

A description of the facility and background information regarding project history has previously been submitted in the report entitled "Site Characterization Work Plan for Excavated Fuel Tank Area, Carnation Dairy Facility, 1310 14th Street, Oakland, Alameda County, California, prepared by Anania Geologic Engineering, dated February 13, 1989.

3.0 EXPLORATION AND METHODOLOGY

3.1 Soil Borings, Depths, Locations and Methods

Soil borings will be drilled to depths of approximately 25 feet. Borings will be drilled utilizing a truck mounted drill rig equipped with hollow stem flight augers. A continuous log of the subsurface conditions encountered will be maintained by our project geologist. Soil samples will be collected at 5-foot intervals in each boring. During drilling operations, continuous air monitoring will be conducted using a Bacharach TLV sniffer. Soil samples for chemical analyses will not be collected at depths below the water table. However, an attempt will be made to obtain a soil sample just above the soil-water interface.

The proposed boring locations are shown on Figure 1. These locations are subject to revisions based on underground utility locations and, if encountered, the location of the contaminant plume.

All drilling and sampling equipment will be steam cleaned prior to drilling each boring. No soap will be used for steam cleaning so as not to introduce soap or phosphates into the groundwater. Cuttings and spoils from the borings will be placed in barrels or stockpiled on the Carnation Dairy Facility site for bioremediation.

3.2 Soil Sampling

Soil samples will be obtained using a Modified California Sampler, lined with three brass sleeves, driven by a 140-lb hammer with a 30-inch drop. Representative samples will be obtained at 5-foot intervals. The bottom or deepest sample from each sampling interval will be sent to the laboratory for analyses. Samples will be capped with a tight fitting plastic cap and sealed with duct tape.

A sample tag with a unique sample number, project number, sampler date and time, will be attached to each soil sample. The sample will then be put in a ziplock bag and immediately placed in a cooler with blue ice at a temperature of approximately 4 degrees Centigrade or less. Each sample will be recorded on a Chain of Custody form and in a field notebook. All samples will be transported to a California DOHS certified laboratory at the end of each work day for analyses.

3.3 Monitoring Well Installation and Construction

After obtaining permits from Alameda County Flood Control District, Zone 7, groundwater monitoring wells will be installed in each of the six borings. The borings will be completed as four-inch monitoring wells to a depth of approximately 25 feet. Wells will be screened to one or two feet above the highest water level,

anticipated to be at a depth of approximately 10 feet below the existing ground surface. The filter pack will extend one to two feet above the well screen. A bentonite seal, one and a half feet thick, will be placed above the filter pack. A bentonite-cement slurry will be placed above the bentonite seal to within one foot of the surface. The upper one-foot will be capped with a redi-mix concrete and the surface finished to allow drainage away from the well head. The wells will be flush mounted and capped with a water tight cap and covered with a locking well case. A well construction detail is shown on Figure 2. Laboratory testing has been conducted on representative on-site materials to evaluate the appropriate slot size for the screen and filter pack. A well design consisting of a #20 slot screen and 2/16 sand is recommended.

3.4 Well Development

After allowing the seal to set for at least 24 hours, the monitoring wells will be developed by swabbing and pumping techniques, extracting at least ten well volumes from each well. Water levels will be allowed to equilibrate for 24 to 48 hours prior to measuring product thickness, if present. Water and materials brought to the surface during well development will be placed in barrels. The water will be sampled and if contaminants are not detected, it will be applied to the on-site bioremediated soil pile. Water contaminated with hydrocarbons shall be treated on-site later.

3.5 Water Sampling

Following completion of well development, one round of initial groundwater sampling will be performed. Water levels and product thicknesses, if present, will be measured prior to obtaining groundwater samples. Groundwater elevations will be measured monthly. Groundwater samples will be collected for the first three consecutive months, then quarterly for the remainder of the year.

3.6 Laboratory Testing

The groundwater and soil samples will be analyzed for TPH with gasoline and diesel standards, BTEX, and oil and grease by methods modified 8015, 8020 and 503 A, D and E. Selected soil and groundwater samples will be analyzed for volatile organics, semi-volatile organics, and PCB's by methods 8240, 8270 and 8080. The samples will be submitted to a laboratory certified by DOHS, in accordance EPA protocols.

4.0 QUALITY ASSURANCE

Field and analytical quality assurance procedures previously

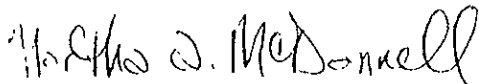
outlined in the Site Characterization Work Plan for the facility will be followed.

5.0 Site Safety

Site safety procedures previously outlined in the Site Safety Plan (SSP) for Remediation/Investigation at the subject facility (prepared by Anania Geologic Engineering, dated February 13, 1989) will be followed. This plan provides established procedures to protect on-site personnel from direct skin contact, inhalation or ingestion of potentially hazardous materials that may be encountered at the site. The SSP establishes personnel responsibilities, personal protective equipment standards, decontamination procedures and emergency action plans. All personnel will be equipped with fluorescent orange safety vests, hardhats and steel toed boots. Flagmen will be positioned on either side of the truck-mounted drill rig to divert traffic on 16th Street during drilling operations. Future modifications to the SSP will also be incorporated, if applicable, to the off-site investigation.

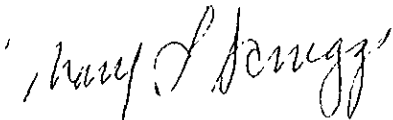
AGE requests your review and approval to perform this Work Plan for off-site exploration. Should you have any questions regarding our proposed scope of services, please contact the undersigned at (916) 631-0154.

Prepared by,



Martha A. McDonnell, PE
RCE No. 42560
Senior Project Manager

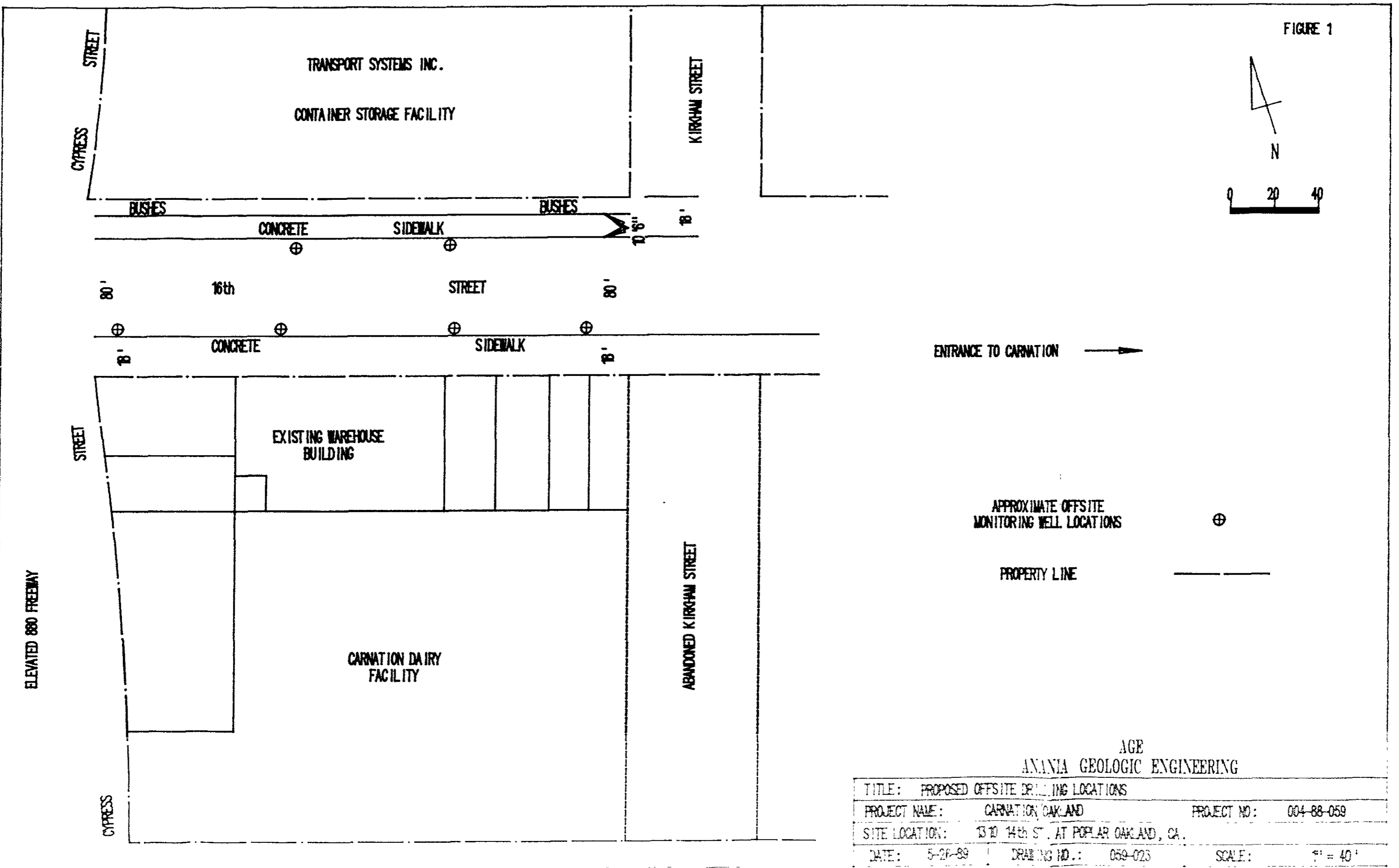
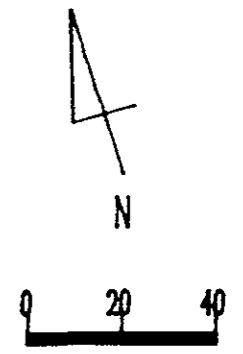
Reviewed by,



Mary L. Scruggs
Senior Project Manager
General Partner

cc: Howard Shumckler, Carnation Company
Jim Person, Carnation Company
Scott Hugenberg, RWQCB

FIGURE 1



ENTRANCE TO CARNATION →

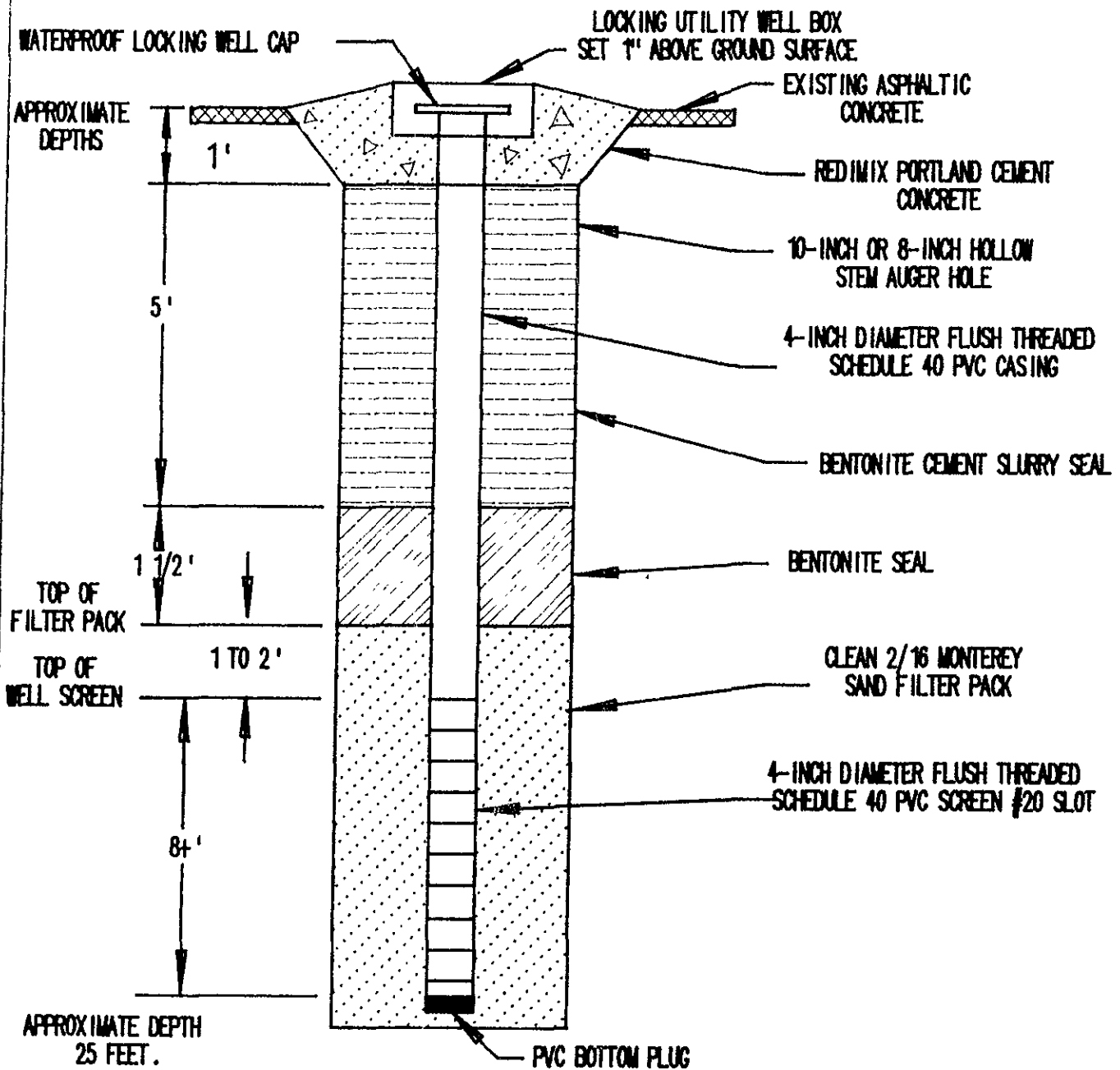
APPROXIMATE OFFSITE MONITORING WELL LOCATIONS ⊕

PROPERTY LINE ————

AGE
ANANIA GEOLOGIC ENGINEERING

TITLE: PROPOSED OFFSITE DRILLING LOCATIONS		
PROJECT NAME: CARNATION OAKLAND	PROJECT NO: 004-88-059	
SITE LOCATION: 13 TO 14th ST., AT POPLAR OAKLAND, CA.		
DATE: 5-26-89	DRAWING NO.: 059-023	SCALE: 1" = 40'

FIGURE 2



AGE
ANANIA GEOLOGIC ENGINEERING

TITLE: MONITORING WELL CONSTRUCTION DETAIL		
PROJECT NAME: CARNATION/OAKLAND	PROJECT NO: 004-88-059	
SITE LOCATION: 1310 14th ST. AT POPLAR ST. OAKLAND		
DATE: 7-18-89	DRAWING NO: 059-027	SCALE: NONE