PORT OF OAKLAND

ENVIRONMENTAL PROTECTION
99 AUG 27 PM 2:03

August 25, 1999

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: **Phase One Tunnel Remediation Investigation and Phase Two Work Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland**

Dear Mr. Chan:

Please find enclosed the "Phase I Tunnel Remediation and Phase II Work Plan for the Intake and Discharge Tunnels," located at the former Seabreeze Yacht Center, 280 Sixth Avenue, Oakland. This document is provided in response to your letter dated May 10, 1999, in which, you request additional information regarding the remediation of the tunnels.

If you have any questions concerning the enclosed document, please contact me at 510-272-1184.

Sincerely,

Douglas P. Herman
Assistant Port Environmental Scientist

Cc: Neil Werner (w/o encl)
Yane Nordhav "
Derek Lee (w/encl)

C:\win\mydocs\projects\seabreeze\wkplntrn.doc

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone (510) 272-1100 ■ Fax (510) 272-1172 ■ TDD (510) 763-5703 ■ Cable address, PORTOFOAK, Oakland

BASELINE

ENVIRONMENTAL CONSULTING

24 August 1999
S9171-C1

Douglas Herman
Environmental Health and Safety Compliance Department
Port of Oakland
530 Water Street, 2nd Floor
Oakland, CA 94607

Subject: Phase One Tunnel Remediation Investigation and Phase Two Work Plan, Intake and Discharge Tunnels, Former Seabreeze Yacht Center, Oakland, California

Dear Douglas:

Enclosed please find one copy of the Phase One Tunnel Remediation Investigation report. A copy of this report should be submitted to Alameda County Health Care Agency. Should you have any questions, or need further information, please do not hesitate to contact us at your convenience.

Sincerely,

Rhodora Del Rosario, P.E.
Civil Engineer

Yane Nordhav
Principal
Reg. Geologist No. 4009

RPD:YN:cr
Enclosure

S9171rpt.wpd-8/23/99

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX: (510) 420-1707
Emeryville Petaluma San Francisco

Phase One Tunnel Remediation Investigation and Phase Two Work Plan

AUGUST 1999

FORMER SEABREEZE YACHT CENTER
Oakland, California

For:

Environmental Health and Safety Compliance Department
Port of Oakland
Oakland, California

S9171-C1.01

BASELINE Environmental Consulting
5900 Hollis Street, Suite D ● Emeryville, CA 94608
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FIGURES

INTRODUCTION

BASELINE Environmental Consulting has conducted Phase One of the Tunnel Remediation Work Plan at the former Seabreeze Yacht Center (site) located in Oakland, California. The Tunnel Remediation Work Plan was prepared in April 1999 in a response to a 3 March 1999 letter from Alameda County Health Care Agency (County)(BASELINE, 1999). The work described in the Tunnel Remediation Work Plan is divided into two phases. Phase One scope of work included:

1) determining the condition of the intake and discharge tunnels;

2) determining the end points of the intake and discharge tunnels; and

3) developing a detailed workplan to remediate the intake and discharge tunnel.

This report documents the Phase One work and presents the scope of work for remediation described as Phase Two in the April 1999 Tunnel Remediation Work Plan.

BACKGROUND

A PG&E electric power plant formerly operated at the site from 1909 through the late 1950s. The power generation plant was constructed at the northern corner of the site and was constructed of reinforced concrete. Saltwater was pumped from an intake tunnel to provide cooling water for the steam condensers of the former power plant (Figure 1). Used cooling water was then discharged to Clinton Basin through a separate discharge tunnel.

In 1995, a subsurface investigation was performed by BASELINE to determine whether the intake and discharge tunnels were removed during power plant demolition activities; the investigation exposed the top of the discharge tunnel and access points to the intake and discharge tunnels, indicating that the tunnels were still present (BASELINE, 1995).

The **intake tunnel** is generally parallel with Fifth Avenue, extending from the northern boundary of the power plant concrete foundation to about the southwest shoreline of the site. The intake tunnel is approximately 710 feet long, of which about 160 feet is within the footprint of the concrete foundation (Figure 2).

Existing drawings for the site indicate that the intake tunnel, outside the concrete foundation, is approximately six feet high and three feet wide; a horizontal barrier appears to be present inside the tunnel at approximately three feet from the tunnel base, dividing the tunnel into two equal sections (top and bottom sections) along the length of the tunnel. The depth to the top of the tunnel appears to vary as the tunnel is sloped, although available drawings do not indicate the tunnel depths at any location.

A manway, believed to be connected to the intake tunnel, was exposed about 160 feet south of the southern concrete foundation boundary during the 1995 subsurface investigation. The manway was encountered at approximately two feet bgs. Following the 1995 investigation, a steel surface cover for the manway was placed across the opening for future access. Existing drawings indicate that two

additional access points (i.e., hatchways) to the intake tunnel are present within the concrete foundation.

The **discharge tunnel** extends from the southern boundary of the power plant concrete foundation to about the northwest shoreline at the site, in the vicinity of the existing wharf. The discharge tunnel is about 410 feet long; of this length, about 160 feet is within the footprint of the concrete foundation (parallel with the intake tunnel within the footprint of the concrete foundation). The tunnel makes a 90 degree turn as it exits the footprint of the concrete foundation and then continues to the wharf.

The height and width of the discharge tunnel outside the concrete foundation appear to be similar to the intake tunnel. The depth to the top of the discharge tunnel appears to vary as the tunnel is sloped; during the 1995 investigation, a flat concrete continuous slab, which may have been the top of the discharge tunnel, was encountered at about 9.5 feet bgs at a distance of approximately 80 feet southeast of the eastern concrete foundation boundary and 140 feet northwest of the existing wharf. A second flat concrete continuous slab was also encountered during the 1995 investigation at approximately five feet bgs, at the northern boundary of the concrete foundation.

A hatchway (i.e., Hatchway 1), believed to be connected to the discharge tunnel was exposed during the 1995 subsurface investigation. The hatchway was located within the concrete foundation and its top was encountered at two inches bgs. Following the 1995 investigation, a steel cover was placed across the opening for future access.

TUNNEL INVESTIGATION AND OBSERVATIONS

On 7 June 1999, BASELINE conducted a tunnel investigation at the site to determine the condition and endpoint locations of the intake and discharge tunnels. The tunnel investigation included exploratory excavation activities with a backhoe and interior tunnel inspections.

Prior to field activities, BASELINE prepared a site-specific health and safety plan. Utility clearance was secured through Underground Service Alert (USA) and site access was provided by a representative from Orient Reefer Container Services, a Port of Oakland lessee at the site. Exploratory excavation activities were conducted by Controlled Environmental Services (CES), under the supervision of a BASELINE geologist; interior tunnel inspections were performed by BASELINE and Enviract.[1]

During field activities, three tunnel hatchways and one manway were located and exposed to access the tunnels; Figure 2 shows the hatchways and manway locations. The approximate hatchway and manway locations were identified from past facility drawings of the former power generating plant. Past drawings indicated that Hatchway 1 provided access to the discharge tunnel and Hatchways 2 and 3 and the manway were associated with the intake tunnel. A description of field activities and observations are provided below.

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[1] Enviract was retained by BASELINE to provide video and locator services.

Discharge Tunnel Hatchway

Hatchway 1 was located and exposed during the 1995 investigation. On 7 June 1999, the hatchway steel cover was lifted with a backhoe to access the hatchway interior. The eastern half of the hatchway provided access to the discharge tunnel. The top of the discharge tunnel was observed in the hatchway at approximately six feet bgs. The tunnel was approximately seven feet high and 4.5 five feet wide and consisted of an arched top (Figure 3). The hatchway was off center from the tunnel alignment; the hatchway bottom appeared to be flush with the tunnel bottom.

Water was encountered in the hatchway at approximately eight feet bgs. Water levels were collected at all exposed hatchways at 1 pm (about low water tidal condition). The water level appeared to fluctuate with rising and falling tide during field activities; an oily sheen was observed at the water surface. Approximately one foot of debris/sediments was present at the tunnel bottom in the hatchway. The tunnel appeared to continue both north and south of the hatchway and was free of major obstructions.

Intake Tunnel Hatchways and Manway

Hatchway 2. Available historic drawings of the former power plant identified the presence of Hatchway 2 within the footprint of the concrete plant foundation (Figure 2). During 1999 field activities, the hatchway surface was exposed at approximately two inches bgs (Figure 4). The hatchway was approximately three feet wide, six feet long, and extended to 12 feet bgs. Gravelly soil, debris (e.g., old ceramic materials possibly associated with former power generating activities), concrete rubble, and broken steel pipelines filled the inside of the hatchway; these materials were removed using a backhoe. During removal, an oily sheen was observed on the soil and debris surfaces.

The western half of the hatchway provided access to the intake tunnel. The intake tunnel top was approximately six feet bgs and was designed with an arched top. Along the north wall of the hatchway, the intake tunnel was approximately 4.5 feet wide and six feet high; along the south wall of the hatchway, the intake tunnel was approximately 5.5 feet wide and six feet high (Figure 4). The intake tunnel appeared to continue north and south of the hatchway and was free of major obstructions

Approximately 3.5 feet of debris/sediments were present in the tunnel bottom. Water was encountered in the hatchway at approximately six feet bgs at 1 pm; similar to Hatchway 1, the water level in Hatchway 2 appeared to fluctuate with rising and falling tide. An oily sheen was observed on the water surface.

Barricades and caution tape were placed around the excavation and a temporary wooden cover was placed over the hatchway for safety purposes.

Hatchway 3. Available historic drawings of the former power plant identified the presence of Hatchway 3 within the footprint of the concrete plant foundation (Figure 2). During field activities, the hatchway surface was exposed at approximately two inches bgs. The hatchway was approximately three feet wide, six feet long, and extended to approximately 13.5 feet bgs. Gravelly

soil and a minor amount of debris filled the inside of the hatchway; these materials were removed using a backhoe; similar to Hatchway 2, an oily sheen was identified on the soils and debris during removal.

The western half of the hatchway provided access to the intake tunnel. The top of the intake tunnel in the hatchway was at approximately 6.5 feet bgs and was designed with an arched top. Along the north wall of the hatchway, the intake tunnel was approximately 5.5 feet wide and seven feet high; along the south wall of the hatchway, the intake tunnel was approximately 4.5 feet wide and seven feet high (Figure 4). The intake tunnel appeared to continue north and south of Hatchway 3 and was free of major obstructions.

Between four to six feet of debris/sediments were present in the tunnel bottom. Water was encountered in the hatchway at approximately 6.5 feet bgs at 1 pm (approximate depth to top of tunnel); similar to the conditions in the other hatchways, the water level in Hatchway 3 appeared to fluctuate with rising and falling tide. An oily sheen was encountered at the water surface.

Barricades and caution tape were placed around the excavation and a temporary wooden cover was placed over the hatchway for safety purposes.

Manway. During the 1995 investigation at the site, a manway was exposed approximately 110 feet south of the southern concrete plant foundation boundary. On 7 June 1999, the temporary surface cover to the manway was lifted with a backhoe to access the interior. The manway extended to a depth of approximately 13 feet bgs. Sediments observed in the bottom two feet of the manway were removed. The sidewalls of the manway were solid, indicating that the intake tunnel was currently inaccessible from the manway. Water was encountered at a depth of eight feet bgs.

Tunnel Interior Video and Locator

Enviract had been retained to provide video and locator services. The purposes of the video camera and locator unit were to identify: 1) the presence of cracks, water, settled solids, and product throughout the tunnels (beyond the hatchway locations); 2) tunnel endpoint locations; 3) tunnel dimensions throughout the tunnels; and 4) presence of a horizontal barrier within the tunnels. Enviract indicated that the video camera and locator unit would not provide effective results because of potential interferences from possible rebars contained in the reinforced concrete, the volume of water contained in the tunnels, and the thickness of the concrete foundation. Therefore, the video camera and locator unit approach were not used.

Excavated Soils and Sediment/Debris

Approximately five yards of excavated soils and debris/sediments contained in the hatchways and manway were stockpiled at the site. The stockpile was placed on and covered by visquene. The stockpiled soil and debris/sediments will be disposed of off-site with future excavated soils generated during the tunnel sealing and remediation phase for the site.

PHASE TWO WORK PLAN: TUNNEL REMEDIATION IMPLEMENTATION

The purpose of this Phase Two Work Plan is to describe the approach for remediating the discharge and intake tunnels. The work plan was developed based on our findings from the June 1999 Phase One investigation and existing information available for the site. The objective of the remediation is to stop potential discharges of petroleum contaminated water/sediments in the Estuary.

Previous investigations at the tunnel hatchways indicate that the tunnels contain debris/sediments, and water with an oily sheen. Water samples collected in the tunnel hatchways in 1995 contained total petroleum hydrocarbons as diesel and bunker C in the tunnel water, ranging from 0.33 to 2.2 mg/L for diesel and less than the laboratory reporting limit to 6.8 mg/L for bunker C (BASELINE, 1995). The water contained in the tunnels may be connected to Clinton Basin and the Estuary, since water level measurements collected in the intake and discharge tunnel hatchways fluctuated with rising and falling tides.

The approach for tunnel remediation would be to seal a section of the intake and discharge tunnels located near the shoreline; the seals would be constructed with concrete (Figure 6).[2] Sealing the tunnels would eliminate the tunnels from acting as a pathway to surface waters and as a result, prevent the potential for discharging contaminants contained in the tunnels directly to surface waters (i.e., Clinton Basin and the Estuary). The following describes the methodology for sealing the tunnel sections.

As indicated above, the intake and discharge tunnel ends could not be located using a video camera and hydrosystem locator unit during the Phase One investigation due to the tunnel conditions observed during field activities. Therefore, BASELINE would identify and expose a tunnel section near its shoreline end (for both tunnels) by exploratory excavation, using existing drawings and past field notes to determine the locations. The top of the tunnels are expected to be greater than nine feet bgs, based on previous site investigations.

Between five and ten feet of the exposed tunnel section would be completely excavated. A protective board would be placed against the open face of the bayward tunnel to prevent debris and sealing materials from discharging into the estuary/basin. Rip rap would be placed in the excavation, in the vicinity of the broken tunnel to create a form for the concrete seal. In addition, concrete tunnel debris would be left in the tunnel excavations to further aid in creating the form. Water encountered in the tunnel excavation would also remain in the excavations.[3]

A concrete mixture would be placed over the rip rap material to create the concrete seal. The mixture would be specially formulated to allow the concrete mix to harden in submerged water. To ensure an adequate seal for each tunnel, the seal length would be equivalent to the removed tunnel

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[2] Existing drawings indicate that the tunnel ends may extend beyond the shoreline and terminate within the estuary/basin. It would be infeasible to attempt to seal the tunnel ends at those locations.

[3] Tidal water from the estuary/basin could potentially discharge into the excavations via the tunnels during seal construction; therefore, dewatering the tunnel excavation would not be feasible.

section; the seal width and height would be constructed to at least one foot beyond the tunnel side and top walls.

After the seal is in place, the excavation would be backfilled with clean fill to the surface. Excavated soils generated from exploratory excavation activities would be stockpiled on top of, and covered with, visquene. Excavated soils would be characterized and transported to an appropriate off-site disposal facility. A report would be prepared to document tunnel remediation efforts and waste management. The work would be undertaken following approval of this work plan by the County.

LIMITATIONS

The conclusions presented in this report are professional opinions based on the indicated data described in this report. They are intended only for the purpose, site, and project indicated. Opinions and recommendations presented herein apply to site conditions existing at the time of our study. Changes in the conditions of the subject property can occur with time, due to natural processes or the works or the works of man, on the subject sites or on adjacent properties. Changes in applicable standards can also occur as the result of legislation or from the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control.

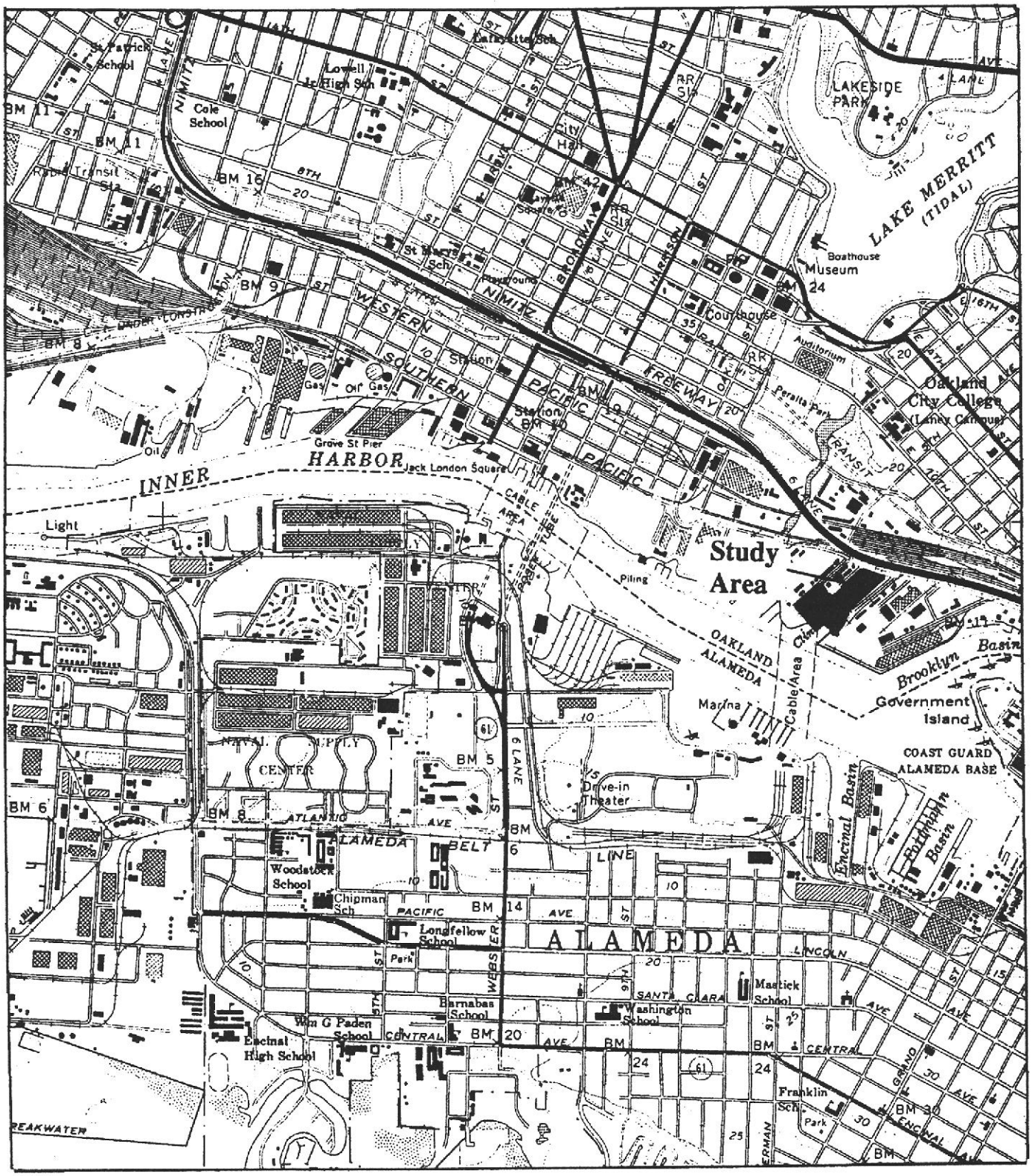
REFERENCES

BASELINE, 1999, Compilation of Historic Site Data, Bunker C Toxicity, and Tunnel Remediation Work Plan, Seabreeze Yacht Center Study Area, Oakland, April

BASELINE, 1995, Third Interim Data Report Additional Subsurface Investigation Seabreeze Yacht Center, Oakland, October

REGIONAL LOCATION

Figure 1



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Former Seabreeze Yacht Center
Oakland, California

BASELINE

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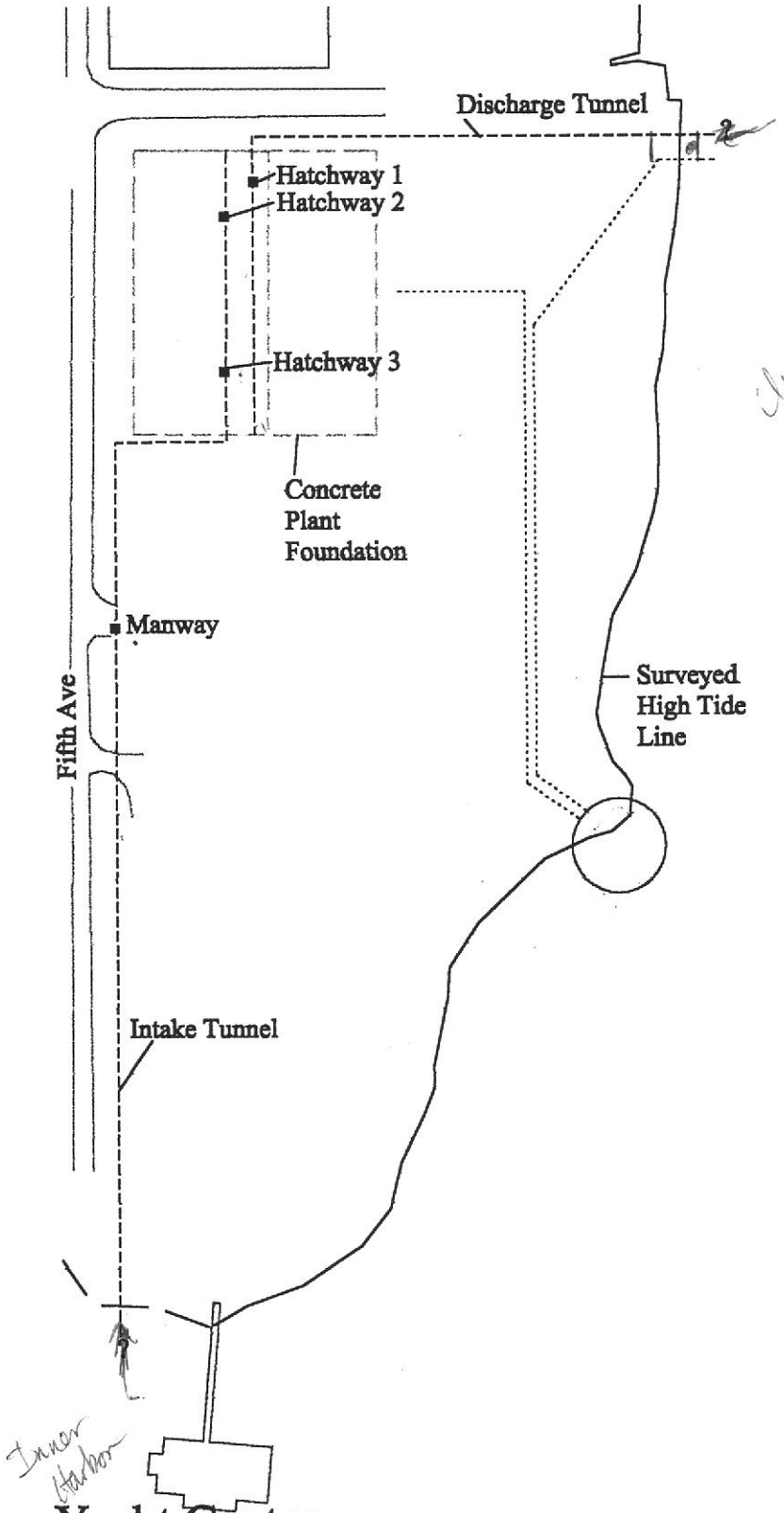
SITE LOCATION

Figure 2



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Oakland, California

BASELINE

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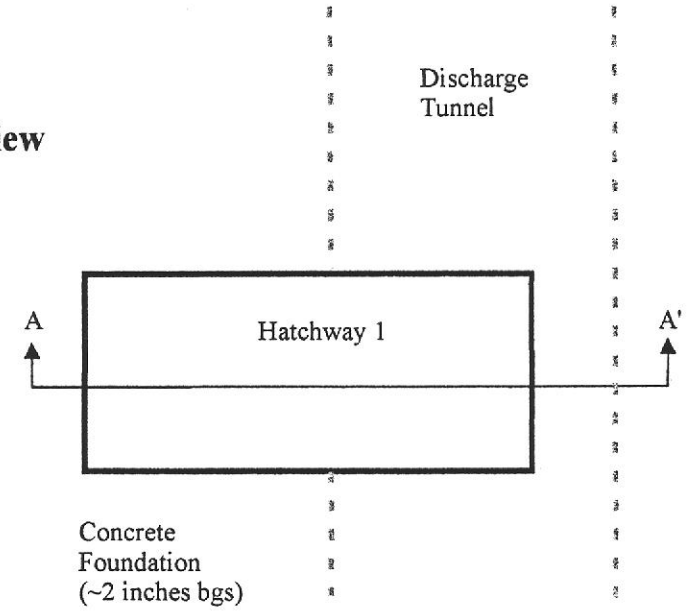
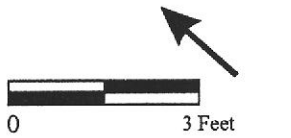
HATCHWAY 1 TO DISCHARGE TUNNEL

Figure 3

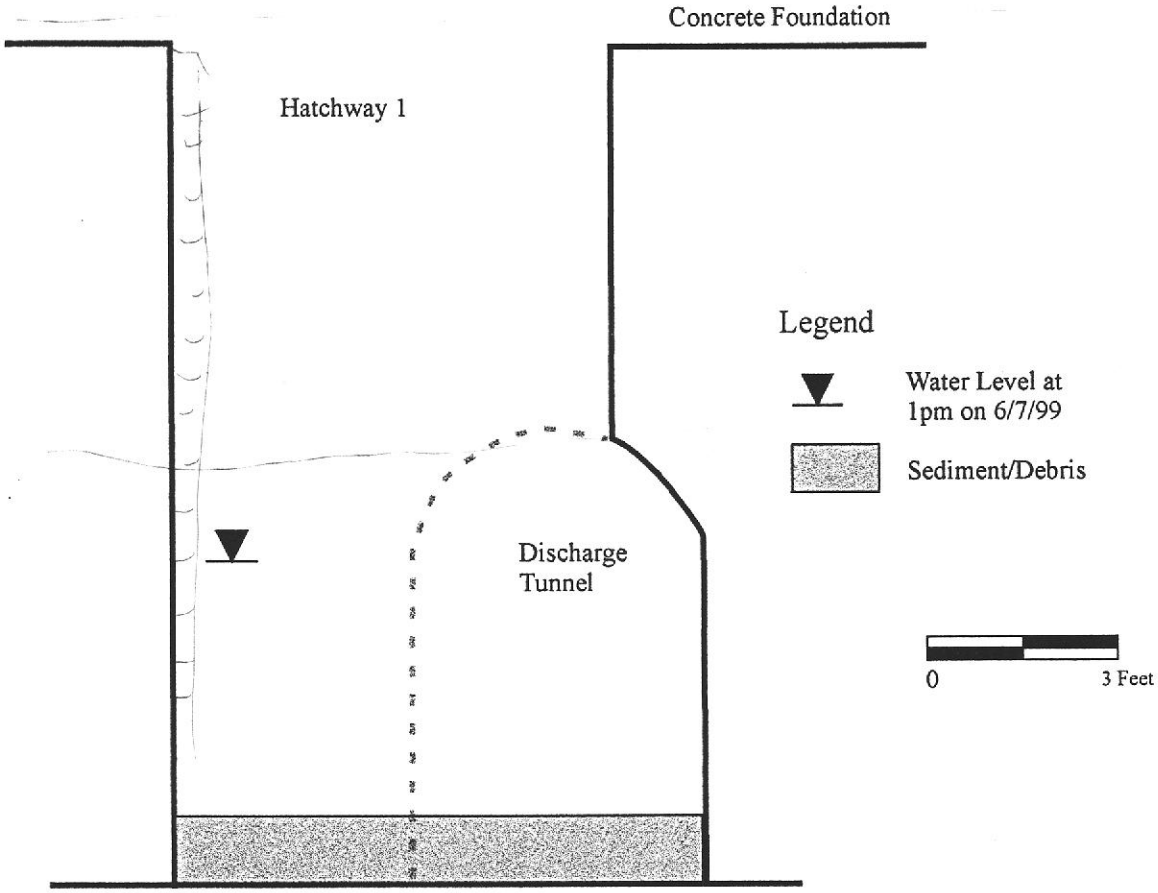
Plan View





See Figure 2 for Location.

Cross-Section A-A'



Former Seabreeze Yacht Center
Oakland, California

BASELINE

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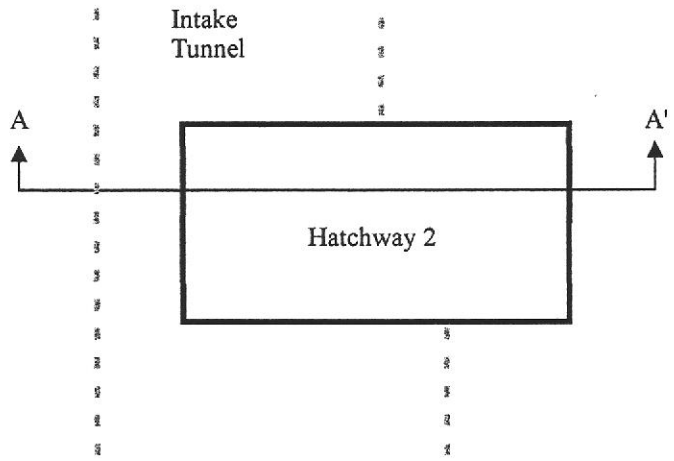
HATCHWAY 2 TO INTAKE TUNNEL

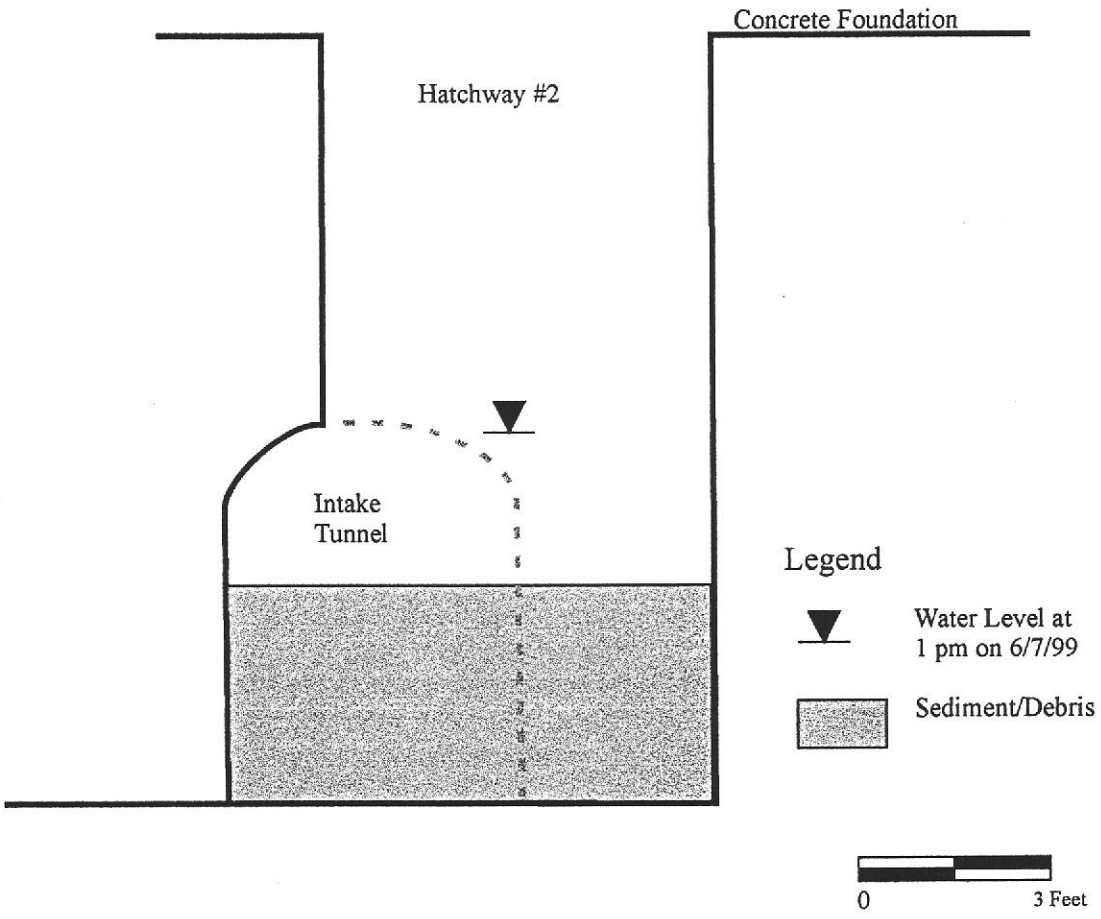
Figure 4

Plan View



See Figure 2 for location.

Cross-Section A-A'



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Oakland, California

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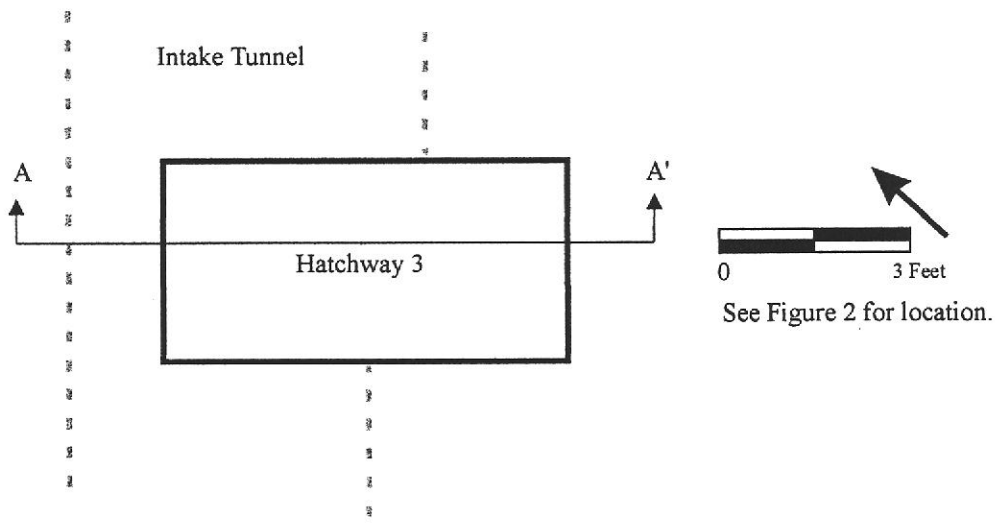
HATCHWAY 3 TO INTAKE TUNNEL

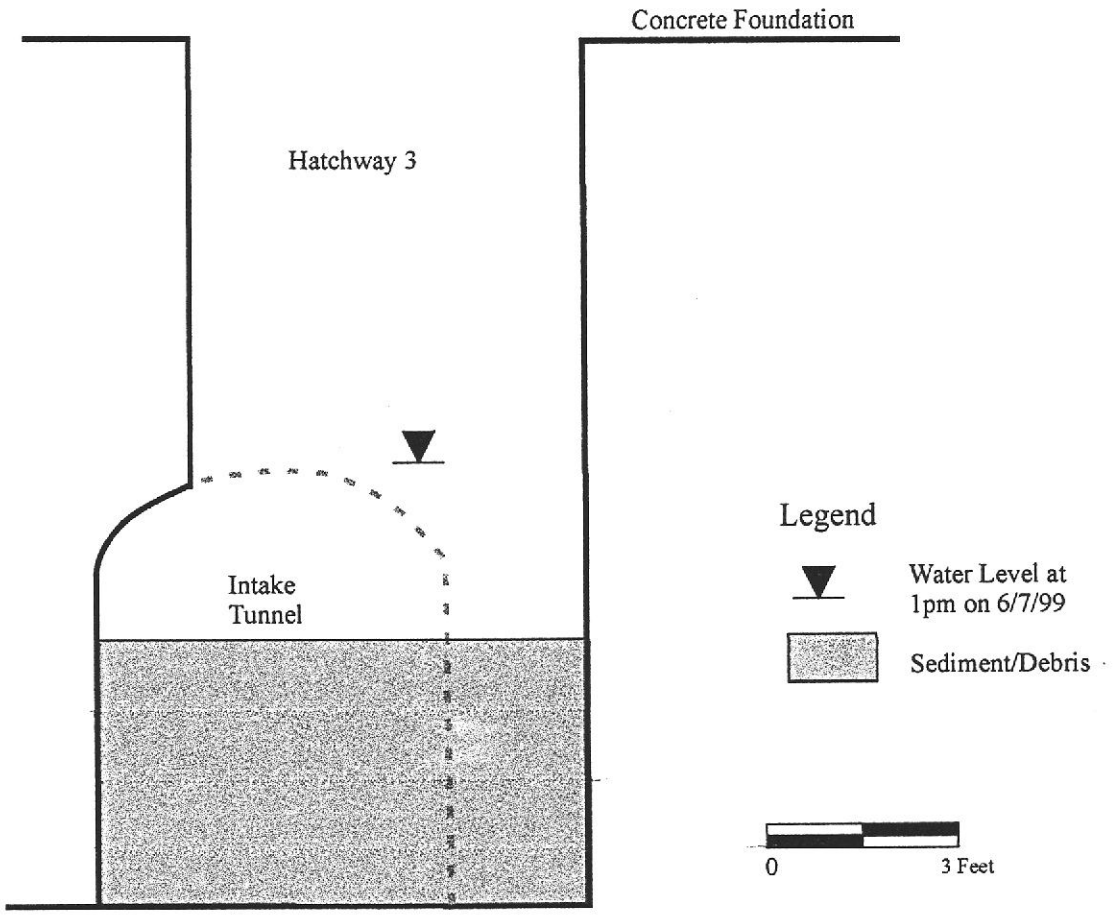
Figure 5

Plan View



See Figure 2 for location.

Cross-Section A-A'



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Oakland, California

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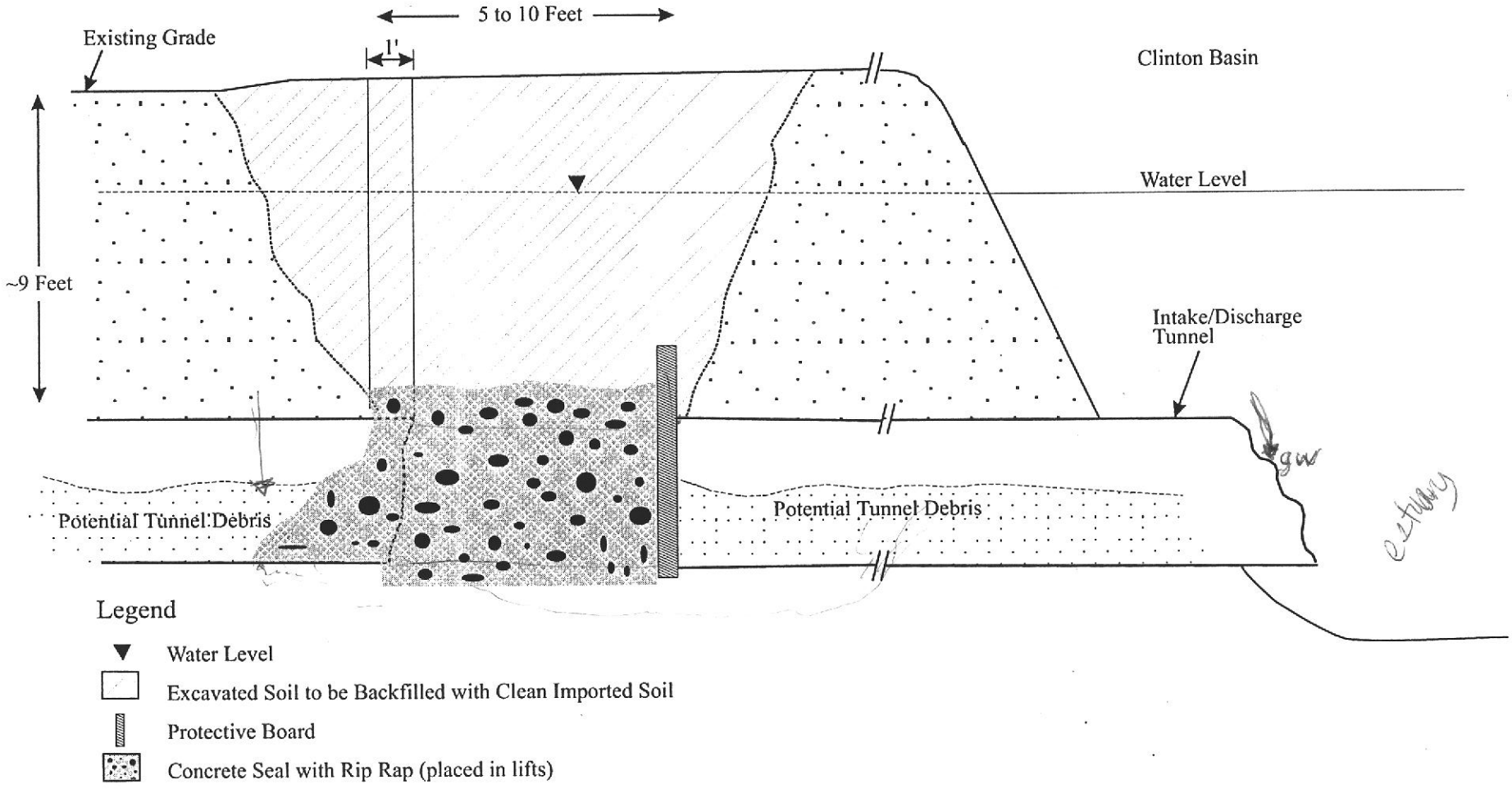
TUNNEL SEALING SCHEMATIC

Figure 6



Former Seabreeze Yacht Center
Oakland, California

Not to Scale

BASELINE

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APPENDIX A
SITE HEALTH AND SAFETY PLAN

SITE SAFETY PLAN

PROJECT/CLIENT INFORMATION

Project No:	Project Manager:	Site Health and Safety Manager:	Field Activities Date:
S9171-C1	Rhodora Del Rosario	Bill Scott	June 1999

Client:	Port of Oakland Environmental Health and Safety Compliance	Address: 530 Water Street Oakland, CA
Contact Person:	Douglas Herman Phone: (510) 272-1184	

Project Description: Collect data to identify the condition of the underground intake and discharge tunnels. Two hatchways and one manway would be exposed, via backhoe. A video and locator unit would be lowered into the tunnels from these access points and would travel along the length of the tunnels. If present, the horizontal barrier within the tunnel would be punctured to access the bottom half of the tunnels. The tunnels may contain water, oil, sludge, and concrete/debris; these materials would not be removed during site activities. On-site personnel would not enter the tunnels at any time. Following data collection, the hatchways and manway would be temporarily covered with trench plates and barricades and caution tape would be placed around excavations for safety purposes. All excavated soils generated during exposure of manway and hatchways would be stockpiled on and under visquene and stored at the site. The site is entirely fenced. The Port will provide access to the site through 10 5th Avenue and/or 280 6th Avenue.

Site History: The site is located east of Fifth Avenue, west and north of the Clinton Basin/Inner Harbor, and south of Embarcadero Way in Oakland. The site is currently owned by the Port of Oakland; the south western portion of the site consists of heavy steel containers which are owned by the Port's lessees, Orient Reefer Container Services (ORCS). ORCS currently uses this area for container storage purposes.

CHEMICAL HAZARDS

Chemical	Description	Health and Safety Standards	Persons Exposed** and Potential Routes of Exposure	Symptoms of Acute Exposure
Copper	Metal, LEL=NA UEL=NA	PEL=1 mg/m^3 REL/TLV=1 mg/m^3 STEL=-- IDLH=100 mg/m^3	Eyes, ingestion, inhalation	Eye irritation, chills, muscle ache, nausea, lassitude, weakness, dry throat
Lead	Carcinogen, non-combustible solid LEL=NA UEL=NA	PEL=0.05 mg/m^3 REL/TLV=0.1 mg/m^3 STEL=-- IDLH=100 mg/m^3	Inhalation, eyes, ingestion	Weakness, lassitude, insomnia, abdominal pain, constipation, anemia, tremor, eye irritation
Diesel	Combustible liquid, may contain carcinogenic middle distillates LEL=0.7%, UEL=5.0%	No PEL	Dermal, eyes, ingestion	Minor eye/skin irritation
Motor oil / Bunker C	Combustible liquid LEL=NA UEL=NA	PEL=-- REL/TLV=NA STEL=NA IDLH=NA OT=NA	Dermal, eyes, ingestion, inhalation	Minor eye/skin irritation
Oil and grease	Generic	None	Dermal	Skin irritation

CHEMICAL HAZARDS

(continued)

Notes: IDLH = Immediately dangerous to life and health; a condition from which one cannot escape within 30 minutes without permanent damage or death.
LEL = Lower Explosive Limit
NA = Not available or Not Applicable.
PEL = Permissible Exposure Limit. Time-weighted average concentrations for a normal 8-hour work period for a 40-hour work week; PELs are enforced by OSHA.
REL = Recommended Exposure Limit. Time-weighted average concentrations for up to a 10-hour day during a 40-hour work week. RELs are recommended by NIOSH, but are not regulatorily enforceable.
STEL = Short Term Exposure Limit. A 15-minute time weighted average exposure which is not to be exceeded at any time during a workday even if the 8-hr time-weighted average is below the PEL; regulated by OSHA.
TLV = Threshold Limit Value, American Conference of Government Industrial Hygienists. See also PEL.
UEL = Upper Explosive Limit
-- = None.
OSHA=California Department of Industrial Relations, which enforces the Occupational and Safety Health Act
NIOSH=National Institute of Occupational Safety and Health

** BASELINE, drillers, and regulatory agency personnel.
[1] NIOSH recommends that occupational exposure to carcinogens should be limited to the lowest feasible concentration.
[2] Lowest feasible recommended.

PHYSICAL HAZARDS:

Heavy equipment, debris, noise, heat or cold stress, over and underground utilities, and tripping and falling hazards. Backhoe equipment and other contractor related equipment will be the responsibility of the contractors. The contractors shall be responsible for complying with all OSHA requirements and accepted industry practices for protection of employee health and safety. The contractors shall ensure that all equipment is in good working order prior to starting work and shall ensure that proper housekeeping is maintained around the work area at all times.

BASELINE employees, subcontractors, and other personnel shall observe the following precautions:
1) Watch for slippery ground;
2) Do not enter tunnel excavation at any time; properly place barricades and caution tape around excavation. Also, place trench covers over open excavation following site activities or when excavation is unattended;
3) Maximize distance from site equipment (e.g., backhoe) and do not take air monitoring readings within swing radius of backhoe;
4) Wear required personal protective equipment at all times (see below);
5) Be aware or possible sidewall collapse around edge of manway excavation; and
6) Avoid heat/cold stress by taking regular work breaks, liquids intake, and appropriate attire, as needed

PERSONAL PROTECTIVE EQUIPMENT REQUIRED: Standard Operating Procedures (SOPs) shall be implemented to minimize exposure to hazardous materials potentially occurring at the Site. However, it is anticipated that SOPs cannot completely prevent exposure to all hazardous materials at the Site. Potential hazards include inhalation and dermal contact with contaminated materials during excavation. Ingestion of hazardous materials is assumed to be negligible if personal hygiene measures discussed below are implemented. Hard hats, unused respirators equipped with high efficiency particulate filters (HEPA) (use to be designated by Site Health and Safety Manager), nitrile gloves, safety goggles (use to be designated by Site Health and Safety Manager), rubber or steel toed chemical boots, water supply for washing, decontamination, and for drinking, disposable Tyvek overalls, first aid-kit, noise protection (ear plugs), and fire extinguisher. The rationale for selection of the PPE is based on the known and/or suspected hazardous materials at the Site, the anticipated amount of contact with potentially contaminated materials (minimal) as part of site-specific tasks, and PPE performance characteristics. The need for respiratory protection shall be selected based on the results of the air monitoring (see Air Monitoring Strategy below). On-site personnel shall be required to don respiratory protection (Level C) if deemed necessary

PHYSICAL HAZARDS:

(continued)

by the designated Site Health and Safety Manager. All respiratory protection must be MSA or NIOSH approved. On-site workers must be trained, as provided by their employer, in PPE use, care, proper fitting (including respirator fit-testing), donning and doffing, and limitations, on at least an annual basis. All PPE must be properly maintained and stored to ensure it is good working condition at the time of use. All PPE must be inspected prior to, and following use. (BASELINE's PPE Program is included in BASELINE's Health and Safety Program Plan). In the event Level B respiratory protection is warranted, on-site personnel will be asked to leave the area immediately by the Site Health and Safety Manager and the manager will notify the BASELINE Project Manager(s) immediately to determine future site actions. If PPE is deemed to be ineffective by the designated Site Health and Safety Manager, the Manager or his designee shall take immediate action to mitigate the problem(s).

AIR MONITORING STRATEGY (INCLUDING ACTION LEVELS): Air monitoring shall be conducted and evaluated by the Site Health and Safety Manager or his designee prior to and during site activities, as described below. Before field work begins, collect background readings using photo ionization detector (PID) and 4gas meter. Monitor excavation and worker breathing zone using the 4gas meter and PID to ensure that Permissible Exposure Limits (PELs), and other appropriate limits are not exceeded during field work. If PELs, or other exposure levels are exceeded, or have the potential to be exceeded, personnel will be instructed by the designated Site Health and Safety Manager to wear appropriate respiratory protection to reduce potential exposure below the applicable exposure limits. In addition, personnel will be asked to don respirators with HEPA filters and goggles if dusty conditions. For purposes of this Exposure Monitoring Plan, respiratory protection (Level C) shall be deemed to be warranted if organic compounds measured using the PID are 1 to 10 ppm above background levels (for greater than 1 minute). Level B respiratory protection shall be deemed to be warranted in excess of ten times the exposure limit (for half face air purifying respirators). If Level B respiratory protection is warranted, on-site field personnel will be asked to evacuate by the Site Health and Safety Manager. If greater than 20% LEL in excavation, stop work to air out boring until less than 20% LEL. In addition, if methane is detected or suspected at any concentration, stop excavation activities, remove any other ignition sources, vacate the area, and ventilate to prevent flammable mixtures from forming. Only resume activities after air monitoring indicates methane is not detected.[1] The results of air monitoring shall be relayed to on-site workers and documented. No IDLH or oxygen deficient conditions are expected at the site. Air monitoring equipment shall be maintained and calibrated in accordance with the manufacturer's specifications and BASELINE's Quality Assurance Program Plan and Health and Safety Program Plan.

SITE CONTROL MEASURES: Access to the Site will be provided by the Port of Oakland. The site is currently fenced, preventing unauthorized entry of individuals. Site communications will take place verbally. No eating or drinking shall be permitted in the exclusion zone; workers may go through partial decontamination (wash gloves, hands, and arms) to consume fluids in the warm zone. Avoid skin and eye contact with soil to the maximum extent possible. Personal hygiene is imperative to prevent prolonged contact with site soils and dusts.

In the event of a minor (incidental) release of a hazardous material, the spill will be immediately cleaned up by on-site BASELINE personnel, and spill cleanup materials placed in labeled drums for off-site disposal. Salvage drums and absorbent materials (i.e., bentonite) shall be provided by the contractor. In the event of a larger than incidental (major) spill of hazardous materials, follow emergency procedures below.

DECONTAMINATION PROCEDURES (PERSONAL AND EQUIPMENT): All personal and equipment (e.g. water level) decontamination procedures shall be implemented prior to leaving the site. A decontamination area will be established from the work area (hot zone) to the control (cold) zone. The location of the decontamination area shall be determined by the Site Health and Safety Manager. Decontaminate equipment, boots and PPE according to the decontamination procedures below, and remove. Decontaminate boots, non-disposable PPE and equipment on-site using trisodium phosphate or Alconox and water, then rinse with water followed by a deionized water rinse. Dispose of disposable PPE in labeled containers/bags and leave on-site for off-site disposal (to be handled by Port). Antiseptic (alcohol) towelettes will be used for cleaning respirators and washing hands and arms. The equipment to be used for decontamination of equipment, boots, and PPE will include three five gallon buckets (TSP or Alconox/tap water, tap water rinse, and deionized water rinse, to be completed in that order) and brushes (for TSP or Alconox bucket). All personnel should shower as soon as possible after leaving the Site. Contain all decontamination rinsate in labeled containers and store on-site. Arrangements will be made by the Port of Oakland for disposal of all drummed/contained materials following the receipt of the analytical results.

Decontamination procedures shall be monitored by the Site Health and Safety Manager to determine their effectiveness. If decontamination measures are found to be ineffective, the Site Health and Safety Manager or his designee shall take appropriate action to immediately correct any deficiencies.

[1] Methane vapors cannot be detected using a PID, but can be detected using the 4gasmeter.

EMERGENCY PROCEDURES: A cellular phone is carried by BASELINE personnel. In the event of a major emergency (e.g., fire, major spill, medical, explosion), the Site Health and Safety Manager or his designee shall use the cellular phone to contact "911," Rhodora Del Rosario (510-420-8686), the client (phone number listed above),[1] and other emergency numbers listed below, as applicable. The designated BASELINE Site Health and Safety Manager shall verbally request evacuation of Site personnel (personnel must first go through decontamination prior to evacuation). Personnel shall evacuate the Site to the entrance at 280 6th Avenue. Any injured personnel shall be brought to the decontamination area prior to evacuation, and shall be assisted in decontamination, according to the procedures above, unless the transport or decontamination may potentially cause further injury, where transport and decontamination shall be requested by the paramedics. The designated Site Health and Safety Manager shall account for all on-site personnel following evacuation.

Rescue and medical duties (other than first aid/CPR by trained personnel), as required, shall be provided by off-site emergency responders (e.g., paramedics, fire fighters). Injured personnel may only be transported to the Hospital Emergency Room if the injury is non-threatening and does not require immediate attention (e.g., scrapes, minor cuts) (The hospital emergency route is included in Figure1).

Following evacuation, the designated BASELINE Health and Safety Manager, shall request on-site personnel to maintain security of the Site (by preventing unauthorized entry) until the Site has been released to off-Site emergency responders (fire fighters, police, etc.). Evacuated personnel will direct emergency responders to the emergency and inform them of Site hazards and the emergency. Other emergency notifications may be required, for example, the Office of Emergency Services (800-852-7550), Alameda County Hazardous Materials Division (510-567-6700), Alameda County Fire Department Headquarters (510-238-3938), State Department of Fish and Game (707-944-5512), and U.S. Environmental Protection Agency, Region IX (415) 744-2000. The need for emergency notifications will be determined by the designated BASELINE Health and Safety Manager and Project Manager(s), based on the emergency at hand. All notifications will be documented.

Following the emergency, the designated Site Health and Safety Officer shall be responsible for preparing a post-incident critique, for the purpose of identifying the cause of the emergency, response initiated, and need for additional training, procedures, or equipment. The designated Site Health and Safety Manager and Project Manager(s) shall take corrective action to prevent reoccurrence of the emergency. At any time if any deficiencies in these Emergency Procedures are identified, they shall be immediately corrected by the Site Health and Safety Manager. On-site workers identifying any deficiencies in the emergency procedures shall immediately notify the Site Health and Safety Manager of such deficiencies.

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Read by/Date:

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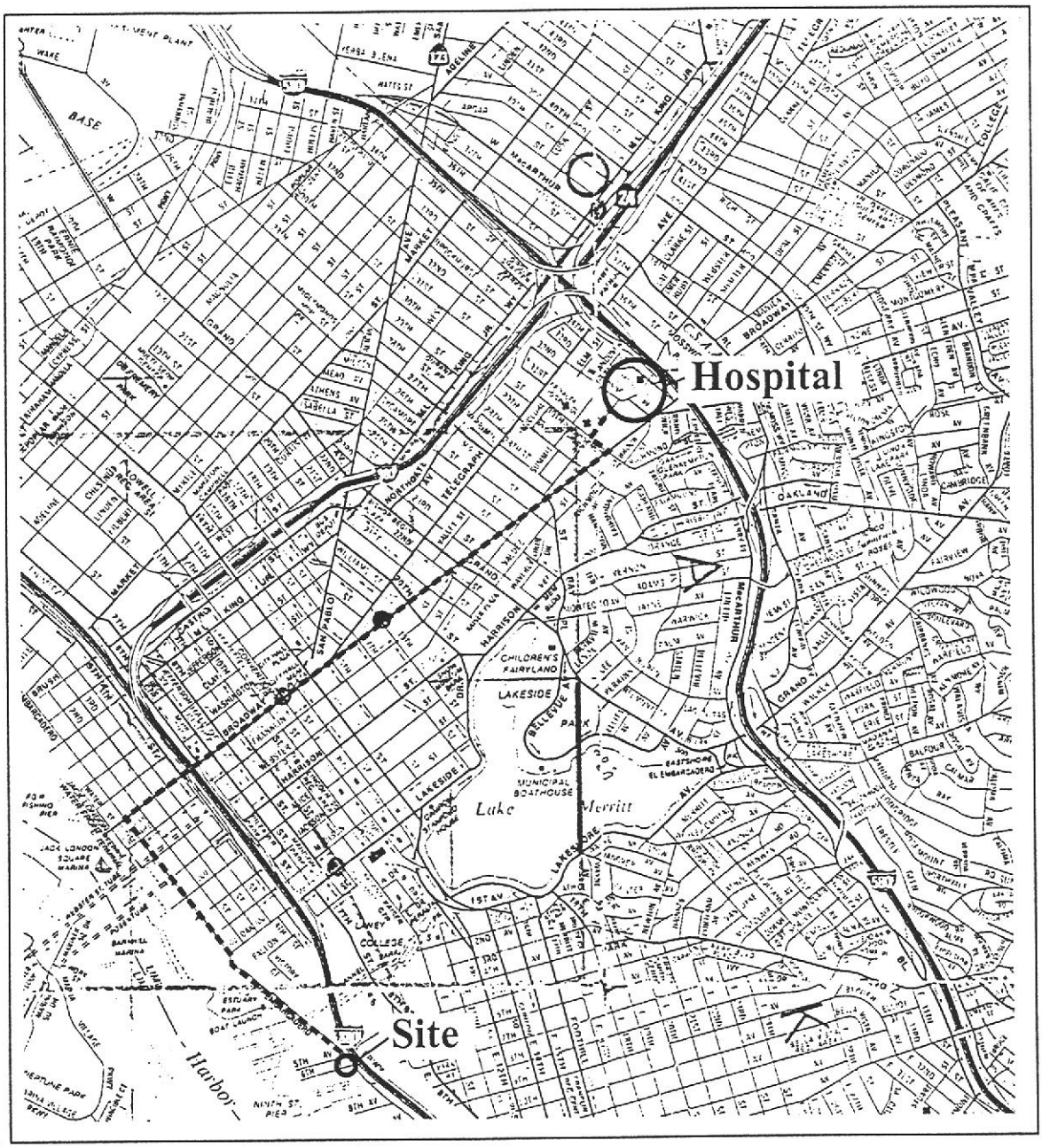

Hospital Clinic name and Address:	Hospital Phone:	Paramedic Fire & Police Dept. Phone:
Summit Medical Center, 350 Hawthorne (located at corner of 34th and Webster Street)	(510) 835-4500	911

Locations: Take Embarcadero north to Broadway. Turn right onto Broadway and continue to 30th Street. Turn left onto 30th Street; turn right on Webster and continue on Webster for two blocks. The hospital is at the intersection of 34th street and Webster. (Decontamination facilities are available.)