

**CALIFORNIA COASTAL COMMISSION**

South Coast Area Office  
300 Oceangate, Suite 1000  
Long Beach, CA 90802-4302  
(2) 590-5071

**RECORD PACKET COPY**

Filed: 8/14/2000  
49th Day: 10/02/2000  
180th Day: 2/10/2001  
Staff: PE-LB *fl*  
Staff Report: 8/25/2000  
Hearing Date: 9/12-14/2000  
Commission Action:

**STAFF REPORT: REGULAR CALENDAR**

**APPLICATION NUMBER:** 5-00-316

**APPLICANT:** City of Los Angeles Department of Public Works

**AGENTS:** Vitaly Troyan, Russell Ruffing, Ofelia Rubio

**PROJECT LOCATION:** Immediately seaward of the Hyperion Treatment Plant,  
12000 Vista del Mar, Playa del Rey, Los Angeles County

**PROJECT DESCRIPTION:** Repair two existing sewage outfalls: (1) re-ballast (replace anchoring stone under) approximate 2,200 lineal feet of existing five-mile outfall; (2) fill voids caused by undercutting and scouring of concrete-encased nearshore pipe section of the existing one-mile outfall, (3) inspect chip on offshore bell of five-mile outfall; repair if necessary 4) repair spalls on nearshore bells of five-mile outfall (use epoxy and grout to fill holes left by chips). Total fill: 1,400 cubic yards of 16-inch rock, 9,180 cubic yards of 12-inch rock and 450 cubic yards of 2-inch rock (replacing rock fill cover on approximately 126,000 sq. feet or 2.9 acres of ocean bottom.)

**LOCAL APPROVALS RECEIVED:**

- 1) Approval in Concept City of Los Angeles Bureau of Engineering

**SUBSTANTIVE FILE DOCUMENTS:**

- 1) United States Army Corps of Engineers Nationwide permit PCN 20000626AOA

**SUMMARY OF STAFF RECOMMENDATION:**

Staff is recommending approval with a special condition requiring measures to protect rocky substrate from impacts from anchoring and to preclude damage from epoxies and chemicals and grouts used during construction.

---

**STAFF RECOMMENDATION:**

The staff recommends that the Commission adopt the following resolution:

**MOTION:**     *I move that the Commission approve Coastal Development Permit No. 5-00-316 pursuant to the staff recommendation.*

**STAFF RECOMMENDATION OF APPROVAL:**

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

**RESOLUTION TO APPROVE THE PERMIT:**

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

**I.     APPROVAL WITH CONDITIONS**

The Commission hereby **GRANTS** a permit, subject to the conditions below, for the proposed development on the grounds that the development will be in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976, will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3 of the Coastal Act, and will not have any significant adverse effects on the environment within the meaning of the California Environmental Quality Act.

**II. STANDARD CONDITIONS:**

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date this permit is reported to the Commission. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

**III. SPECIAL CONDITIONS****1. Chemicals and epoxies.**

Prior to issuance of the coastal development permit the applicant shall provide a list of the chemicals, grouts and epoxies it plans to employ underwater. The applicant shall provide evidence acceptable to the Executive Director that such chemicals and epoxies are resistant to dissolution in marine waters and are not toxic to marine life. The applicant shall agree in writing to use the materials on the approved list, shall require the use these materials in the its contract and shall carry out the project consistent with the agreement.

**2. Kelp Habitat: contract provisions.**

Prior to issuance of the coastal development permit the applicant shall agree in writing that it shall include provisions that reduce hazards to marine life in all contracts, and shall provide such provisions to the executive director for review and approval. Said provisions shall require that the contractor conduct a survey

of the seafloor prior to commencement of construction activities and shall forbid the operator from anchoring on in any areas of hard bottom (rocky substrate) seafloor identified by the survey. Before carrying out any work authorized by the permit, the operator shall forward the survey and anchoring plan to the Department of Public Works and to Executive Director for review and approval.

#### IV. FINDINGS AND DECLARATIONS:

The Commission hereby finds and declares:

##### A. Project Description and Location

The project proposes repairs on both the 5-mile and 1-mile outfall pipes for the Hyperion Sewage Treatment Plant. The Hyperion Plant discharges most of its treated water through the 5-mile outfall and the 1-mile outfall is maintained for emergencies or for times when the 5-mile line cannot be used. The project does not include any new or different method of sewage disposal.

The 5-mile outfall is a 144-inch inside diameter concrete pipe that rests on the seafloor on a bed of small rock (ballast material). One component of the project is to replace ballast rock adjacent to this outfall that has been lost due to erosion or scour, restoring the original project design. The 1-mile outfall is supported on pilings, but over time a section of the seafloor under the outfall has eroded. Ballast material will be placed under and adjacent to this section of the 1-mile outfall to fill in the scour area and provide lateral support for the outfall. A small chip was observed at the end of the 5-mile outfall, and several chips were observed along the 1-mile outfall. These will be repaired with underwater epoxy.

More specifically the project includes the following activities:

- (1) Re-ballast (replace anchoring stone adjacent to approximately 2,200 lineal feet of existing five-mile outfall. (2) Fill voids caused by undercutting and scouring of concrete-encased nearshore pipe section of the existing one-mile outfall. (3) Inspect chip on offshore bell of five-mile outfall; repair if necessary. (4) Repair spalls on nearshore bells of five-mile outfall (use epoxy and grout to fill holes left by chips). Total fill: 1,400 cubic yards of 16-inch rock, 9,180 cubic yards of 12-inch rock and 450 cubic yards of 2-inch rock (replacing rock fill cover on approximately 126,000 sq. feet or 2.9 acres of ocean bottom.)

The five-mile pipe extends from the plant to depths of about 200 feet. The repairs are proposed at depths of 61 feet to about 79 feet, relatively near shore, where the pipe

is exposed to breaking waves. The waves have scoured the supporting ballast and redistributed the rock along the sea bottom. The one-mile pipe is suspended on piling and encased in concrete. The waves have scoured out the sediments that support the pipe. For both outfalls, the applicants propose to install the rock by means of a "rock box" or tremie. The applicants explain that a tremie is a telescoping pipe that will extend from a barge down to the area where they plan to place the material under the pipe. As the material is placed, it forces the tremie up. This will prevent rocks from striking the pipe or spreading over the sea floor and will confine the rock to the intended area.

Other repairs include inspection of the "bells" by divers. Those that are chipped will be patched with underwater grout and epoxy. More details concerning the applicants' proposals are found in the attached Exhibit 3.

The applicant states that the Bureau of Sanitation's Environmental Monitoring Division has informed the project manager that USGS "Backscatter" maps of the Santa Monica Bay ocean bottom in the vicinity of both the 1 and 5 mile outfalls indicate sandy bottom along the length of both pipes. Also, EMD's sample point B-7, which is a few yards north of the 5-mile outfall's midpoint, indicates normal sand bottom.

#### **B. Permit Threshold**

Although the project is repair and maintenance of an existing facility, the project requires a coastal development permit because of its location seaward of mean high tide and its potential for causing damage to the marine environment. Section 30610 subsections (c) and (d) state that the following activities are exempt from coastal development permit requirements:

(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter. (Emphasis added)

(e) Any category of development, or any category of development within a specifically defined geographic area, that the commission, after public hearing, and by two-thirds vote of its appointed members, has described or identified and with respect to which the commission has found that there is no potential for any significant adverse effect, either individually or cumulatively, on coastal resources or on public access to, or along, the coast and, where the exclusion precedes certification of the applicable local coastal program, that the exclusion will not impair the ability of local government to prepare a local coastal program.

In Section 13252 of the California Code of Regulations states that work that involves placement of sand or other solid material on a beach or in coastal waters requires a permit. It also states that if the development is specifically mentioned in the September 5, 1978, *Repair, Maintenance and Utility Hook Up Categorical Exclusion* it does not require a permit. This repair of the foundation of a pipeline is not specifically described in the 1978 document. Repairs to sewer pipelines are exempted in that document unless the repair requires more than 500 square feet of brush clearance. Clearly the intent of the categorical exclusion was that repairs that involved activities normally associated with damage to habitat would require review by the Commission. Fill of open waters is an activity that can cause damage to habitat, specifically the marine environment. This project would require 1,400 cubic yards of 16-inch rock, 9,180 cubic yards of fill of seafloor, covering an area about 13-16 feet wide along both sides of the pipes. The 5-mile outfall was built originally with ballast and the applicant is not proposing to widen or extend the area previously covered by ballast. For the 1-mile outfall, new ballast will be installed under the outfall to fill the scour void. Both activities require a permit because they involve fill of coastal waters.

### C. Marine Resources

Coastal Act sections addressing marine resources require that development maintain and restore the biologic a productivity of marine resources (30230, 30231). Section 30233 limits the placement of fill in estuaries and open coastal waters to a limited list of purposes.

#### Section 30233.

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

This project is repair and maintenance of an existing sewage outfall, an incidental public service purpose, so this fill is allowable.

As noted above, Sections 30230 and 30231 require the protection of the biological productivity of marine waters. City, State and Federal agencies reviewed extensive documentation of habitat damage caused by sewage from Hyperion plant. In discussing possible improvements to the system, the City examined the effects of both the length of the outfall and the level of treatment on water quality. The City and the EPA determined that the 5-mile length discharged at an adequate distance

discussing possible improvements to the system, the City examined the effects of both the length of the outfall and the level of treatment on water quality. The City and the EPA determined that the 5-mile length discharged at an adequate distance from the near shore environment if on shore treatment of the sewage were enhanced. The City has now completed the required improvements. However, a breach in this line could release wastewater close to shore. The ballast material is intended to support the wastewater line and prevent a break that could occur if the line lost support.

The applicant has stated that it intends to avoid damage to rocky bottom habitat by including measures in the contract forbidding the operator from anchoring on rocky bottom habitat. Rocky bottom can support kelp. The Commission finds that this measure can reduce damage to rocky bottom habitat. Special condition 2 requires the applicant to agree to this before the permit can be issued, to provide a copy of the contract and before any work can be authorized, to provide a copy of a survey and anchorage plan provided by the contractor to the executive director.

The applicant states that there is a possibility that siltation will occur when the rock is released into the water. The rock arrives from the quarry covered with dust and grit, and when the rock is dropped into the water this silty material will wash off into the water column. The applicant believes that this effect is minor, temporary and unavoidable. The City Bureau of Sanitation investigate mitigation measures such as washing the rock on the barge, but was told by the barge operator that such measures were not feasible. Pre-washed rock is not available.

Staff was also concerned that silt would be stirred up when the rock hits the sandy bottom under the one-mile pipe, and the sand rebounds from the impact. This could cause a turbidity plume. Although the tremie or rock box method of placing the rocks will confine the rocks to a narrow area, it will not trap silt. The applicant sees no method of trapping the silt on the sea floor 25-50 feet underwater. The Commission finds the amount of silt released will be minimal and that there are no feasible methods of trapping the silt.

Finally the applicant proposes to repair spalls and cracks in the "bells" along and at the ends of the pipes using grouts and epoxies that will not harm marine life. The Commission requires, in Special Condition 1, that the applicant provide a list of such materials to the Executive Director along with evidence that such materials are unlikely to dissolve in seawater and are not toxic to marine life.

The purpose of the project is an allowable repair of a facility that protects the environment of the sub-tidal marine environment. As conditioned to protect the near shore environment from the damage caused by the barge anchoring on hard bottom sea floor, and from toxic epoxies, the development will minimize damage to the marine environment attributable to the project. The project will also protect the marine environment from far more serious hazards that could occur from a pipe

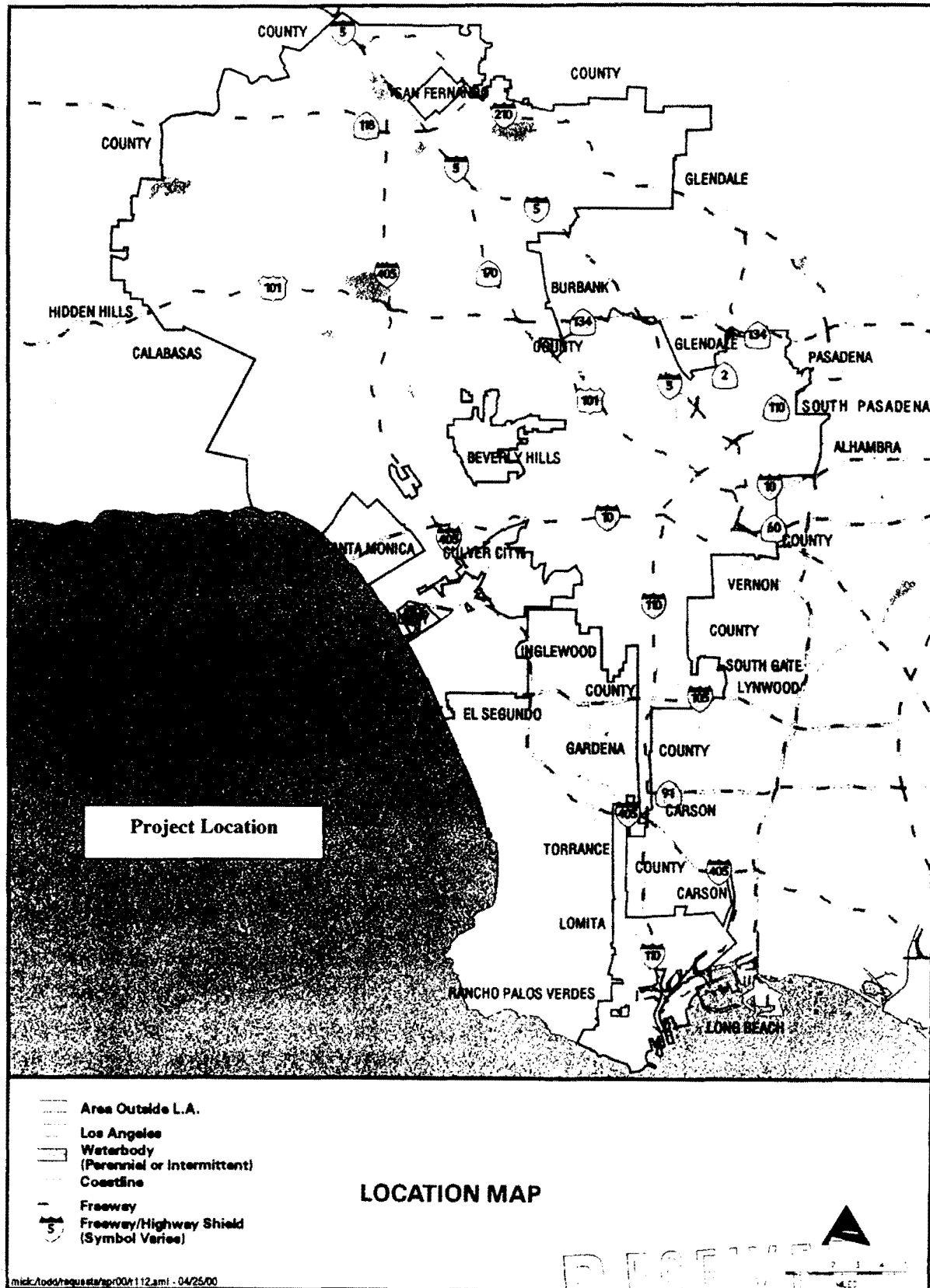
**D. California Environmental Quality Act**

Section 13096 of the Commission's regulations requires Commission approval of Coastal Development Permit applications to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

Staff has consulted with the applicant and others concerning potential impacts and feasible mitigation measures, and has imposed three special conditions. The no project alternative will result in serious environmental damage. There are no other feasible alternatives or mitigation measures available, which will lessen any significant adverse impact the activity, would have on the environment. Therefore, the Commission finds that the proposed project is consistent with CEQA and the policies of the Coastal Act.



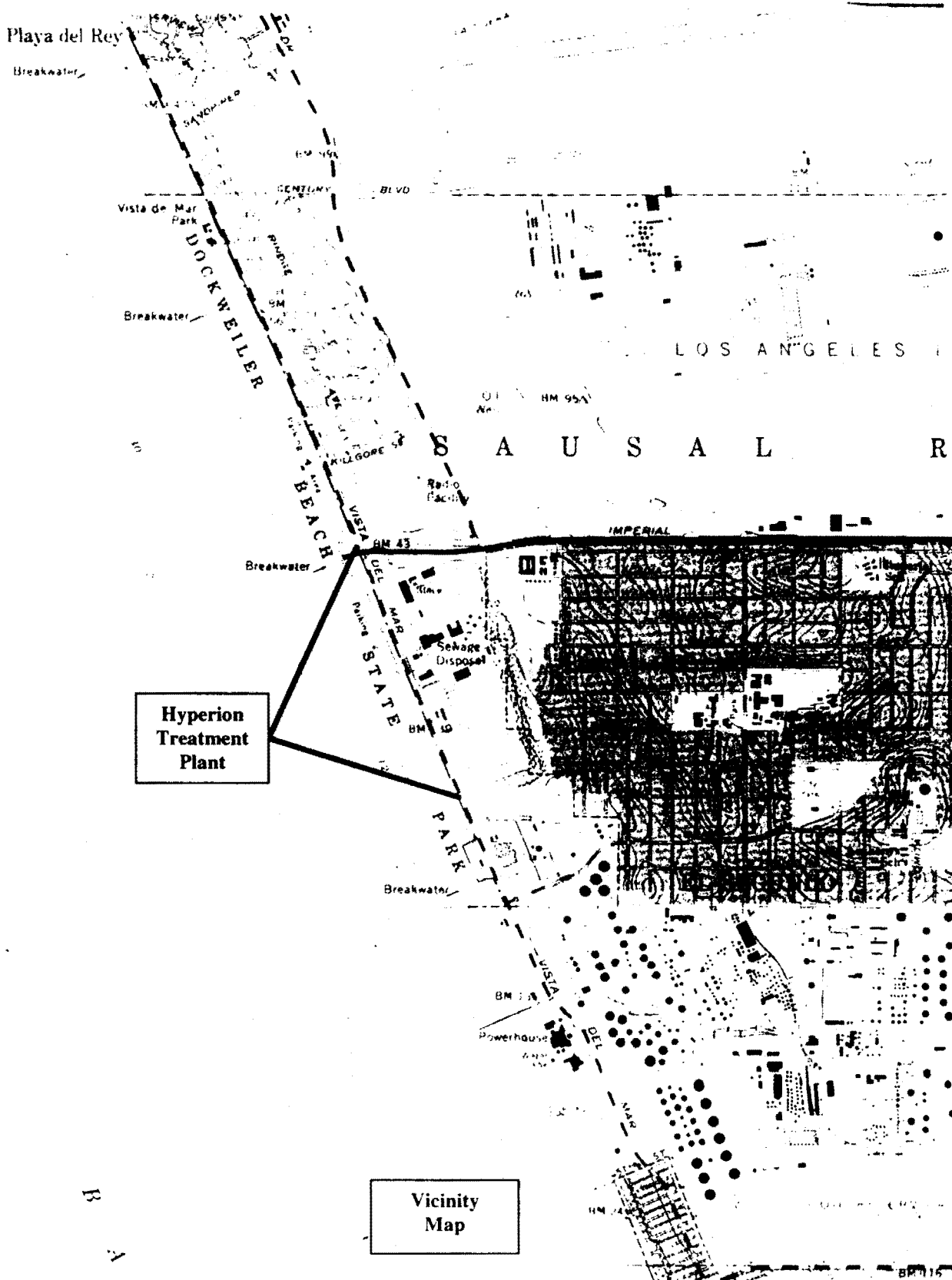
**Hyperion Treatment Plant Emergency 1 & 5 Mile Outfalls Repairs  
Application For Coastal Development Permit**



5-00-316  
Exhibit 1  
Location

AUG 7 2000  
 CALIFORNIA  
 COASTAL COMMISSION

Hyperion Treatment Plant Emergency 1 & 5 Mile Outfalls Repairs  
Application For Coastal Development Permit



5.00 316  
Exhibit 2  
immediate location

# HYPERION TREATMENT PLANT EMERGENCY 1 & 5 MILE OUTFALLS REPAIRS

Addendum to Application For Coastal Development Permit

Page 1

## **Section II.2 Describe the proposed development in detail. Include secondary improvements such as grading, septic tanks, water wells, roads, driveways, outbuilding, fences, etc.**

Repair and rehabilitative work will be performed on the City's Hyperion Treatment Plant's (HTP) Five-mile and One-mile Ocean Outfalls. These pipes are located on the Santa Monica Shelf in the Santa Monica Bay, offshore of HTP.

The Five-mile and One-mile Ocean Outfalls discharge treated effluent from HTP to the Pacific Ocean. The Five-mile Outfall will remain in service discharging treated wastewater during the repair work. The existing One-mile Outfall is restricted for use only in emergency conditions; therefore, it may be in service during the repair work but this is highly unlikely. Both outfalls are 144-inch inside diameter steel reinforced concrete pipes. All dimensions, with regard to pipe size, refer to internal diameters unless otherwise specified.

Drawing C-1 shows a layout drawing of the Five-mile and One-mile ocean outfalls with sections designated for repair work. The drawing shows the subject outfalls' station numbers, manhole locations and bottom depth contours. Note on both drawings that station numbers (distances) are measured from inshore on the outfalls. All depths provided are approximations.

The Five-mile Outfall is constructed with bell and spigot concrete joints laid directly on the ocean bottom. The One-mile Outfall joints and nearshore concrete encased section are supported with 14-inch steel bearing H-piles. The One-mile Outfall encasement extends from the shoreline to a water depth of approximately 30 feet.

All work to be performed consists of mobilization, furnishing all materials, equipment, tools and plant, transportation and the performance of all necessary labor, including all appurtenant work thereto, for two major work elements (elements I and II), and two minor work elements (elements III and IV), as described below.

### **Work Element I - Re-ballast approximately 2,200 lineal feet of the five-mile outfall.**

Underwater inspections demonstrate low ballast (anchoring stone) along the main barrel of the outfall. The outfall is constructed of reinforced concrete pipe with bell and spigot concrete joints and is laid directly on the ocean bottom. The stone was originally placed to the springline on each side of the pipe - to the midpoint of the 14 feet outside diameter pipe. The slope of the ballast was approximately 3 horizontal to 1 vertical.

The stone ballast is a necessary part of the pipe restraint system against movement by hydrodynamic forces and as scour protection. The ballast provides a passive reaction to lateral hydrodynamic (drag and inertia) forces, and any loss of ballast thereby reduces this form of restraint. Seismic stability is another concern that is eliminated by a sufficient rock envelope. In addition, local scour conditions may undermine a section of the pipe sufficiently to result in excessive settlement. Re-ballasting is required for stability during extreme storm and seismic conditions

The ballast along the total length of the main barrel pipe has undergone lowering as a result of settlement, scour, or transport by other natural means. Inspections show that from station 69+56 to approximately station 91+30 the rock levels are the lowest. On the north side generally the rock levels are lower and within this reach the rock is consistently at or below the 1/4 mark. On the south side occasional 1/3 levels are noted. A cross section of the pipe and ballast condition clearly alerts of the severe instability within this area because of the loss of rock (see Addendum Figure 1).

5.00.316

Exhibit 3 p1

applicant's detailed description

## Page 2

A hand-drawn diagram of a curved structure, possibly a pipe or duct, showing various dimensions. The top left is labeled "TDC". The diagram includes several horizontal and vertical dimension lines with labels:  $Y_2$ ,  $Y_3$ ,  $Y_4$ ,  $56"$ ,  $42"$ , and  $36"$ . A curved line represents the structure's profile. A note at the bottom right states: "LOWEST BALCAST AT  $Y_4$  MINUS ( $36"$ )".

Exhibit 3p2

# HYPERION TREATMENT PLANT EMERGENCY 1 & 5 MILE OUTFALLS REPAIRS

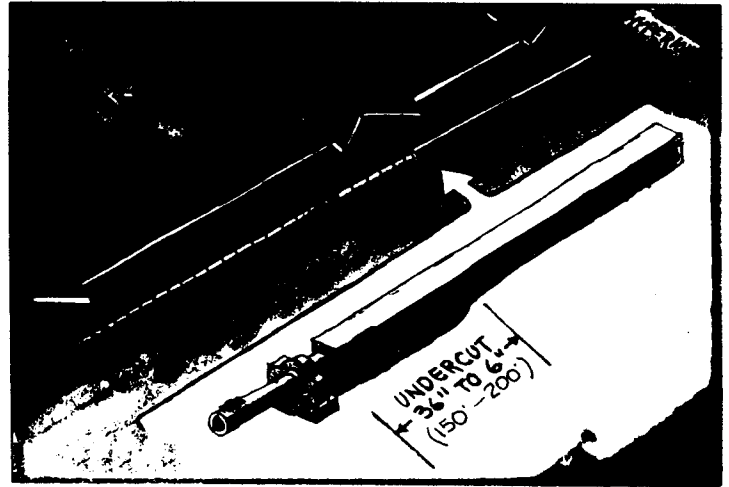
Addendum to Application For Coastal Development Permit

Page 3

- Reduction of lateral soil restraint of the piles that support the encasement.
- Potential increase in the rate of corrosion of the supporting piles by exposing them to marine growth or increased water velocities.

The scour under the encasement potentially reduces the vertical stability of the pipeline by encasement scour in the following ways:

- Loss of soil as a "reserve support system" in the event of pile failure.
- Reduction of vertical pile capacity as the effective embedded length of a pile, and the corresponding pile/soil friction area is reduced.
- Reduction in vertical pile capacity as a result of increased pile corrosion, possibly caused by exposure to marine growth or increased water velocities.



Addendum Figure 2

The piles have proven sufficient to support the structure weight and to resist wave loading in the scoured area during typical sea conditions. However, although waves can and do cause significant lateral forces on the encasement, the most critical lateral loads that the encasement may have to resist might be associated with seismic events. Should large lateral forces occur transverse to the encased pipe axis, the piles will be subjected to bending moments in the direction of their least strength, because of their orientation. Therefore, the scouring and potential reduction in lateral stability of the encasement may be critical during a severe seismic event.

The City of Los Angeles will fill the scour void beneath the encasement and protect the affected area to prevent further scouring. The void beneath the 20-ft encasement of the One-mile Outfall will be filled with 2-inch rock. The rock will be applied to the sides and under the encasement commencing from Station 20 + 86.5 (30ft depth) towards the shore until the void is packed solid with rock as shown in Drawing C-4. This will provide for solid contact to the encasement and piles.

The City of Los Angeles will place <sup>16</sup>/<sub>2</sub>-inch rock on the ocean floor along both sides of the rock-filled void and 20-ft. encasement of the One-mile outfall from Station 20 + 86.5 (30ft depth) towards the shore and fifty (50) feet beyond the nearshore end of the void as shown in Drawing C-4.

Drawing R-5 contains copies of original construction design drawings.

## Work Element III – Inspect chip on the offshore bell of the main barrel of the five-mile, 144-inch diameter outfall (190 ft. depth)

The pipeline was constructed by placing assemblages consisting of 8 pieces of 24 feet-long pipe, pre-joined and attached to a pontoon-strongback. A 1-inch thick layer of epoxy was attached to the full face of the leading spigot and to the full face of the trailing bell of each assemblage. This epoxy facing was intended to serve as a cushion-type protector for the pipe ends during the underwater connection of the assemblages. Bells and spigots of the pre-assembled joints contained no epoxy facing.

5.00.316

Exhibit 3 p 3  
detailed description

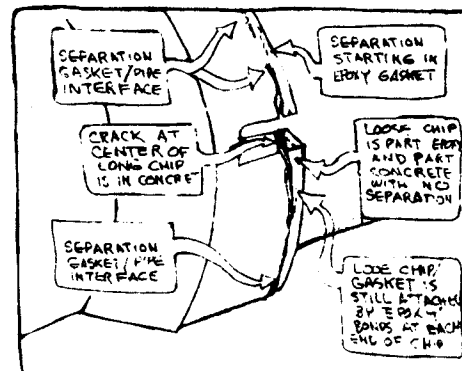
# HYPERION TREATMENT PLANT EMERGENCY 1 & 5 MILE OUTFALLS REPAIRS

Addendum to Application For Coastal Development Permit

Page 4

The inspection of one bell joint, at the 159-foot water depth, shows a small section of concrete pulled away from the bell face and adhering to the separated epoxy cushion. The separation of the epoxy cushioning material from the bell face presents no loss in pipe functional or structural integrity (see Addendum Figure 3). The small spall in the concrete may have resulted from an installation bump of the 8 segment assemblage in excess of what the bumper could cushion. Possibly no reinforcing bar has been exposed and the corner spall does not constitute a problem.

Inspection of the bell could not examine the depth or the width of the small concrete spall. Determination if reinforcing steel was exposed has not been possible. However, there is no evidence of additional spalling or other sign of concrete degradation. In the region of the bell where steel might be exposed, there are no structural stresses associated with internal pressure so that limited degradation would not impair the functionality of the pipe.



Addendum Figure 3

The City of Los Angeles will inspect the condition of the concrete at the bell by removing the epoxy rubber bumper and inspecting for exposed reinforcement and concrete deterioration. Based on the above, we estimate that the bell could potentially require repair. Various remedial options are available if bell concrete has been damaged, and the appropriate repair method depends on the extent of damage incurred and on the potential for further deterioration. In the worst case, repair would require preparation of the damaged area and patching with epoxy, epoxy grout, or a combination thereof. Although the primary objective of the repair method is to restore the integrity of the bell to a level consistent with the outfall as a whole, other factors will be considered when evaluating the most appropriate alternative. The following factors will be considered, not necessarily in order of importance:

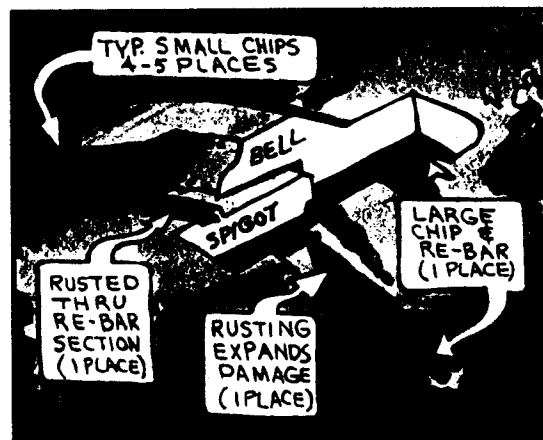
- Experience of the marine construction industry;
- Proven performance of repair materials for the proposed application;
- Risk to worker safety;
- Risk of interference with the outfall operation;
- Available means for quality control and testing of the repair;
- Severity of the damage.

Drawing R-5 contains copies of the original construction design drawings for the pipe joint.

## Work Element IV - Repair spalls/chips on nearshore bells in the 300-ft section of the main barrel inshore on the five-mile outfall (depth 60-ft.)

Seven (7) bells are potentially damaged in a 300-foot length of pipeline and all damage occurs on the top of the bells. Damage appears to be the result of anchor impacts and chain drags associated with vessel and fishing activity (see Addendum Figure 4).

The City of Los Angeles will repair the seven spalls/chips on nearshore bells shown on C-1 between Station 67+48 (61 feet depth) and Station 69+40 (61 feet depth). The repair will proceed by preparing the damaged area, including exposed



Addendum Figure 4

5-00-316

p. 4 Exhibit 3  
detailed description

# HYPERION TREATMENT PLANT EMERGENCY 1 & 5 MILE OUTFALLS REPAIRS

Addendum to Application For Coastal Development Permit

Page 5

reinforcing steel, and patching the damaged area with epoxy, epoxy grout, or a combination thereof. Concerning the repair, the same factors described previously under repair #3 will be considered.

Drawing R-5 contains copies of the original construction design drawings for the pipe joints.

The type and total amount of fill material for all the work described above is approximately 10,580 cubic yards of 12-inch rock and 450 cubic yards of 2-inch rock. The nature of this project is such that no surface area will be filled. However, to give a general idea of the breadth of the project, the City of Los Angeles expects to fill a total of approximately 126,000 square feet (2.9 acres) of ocean bottom along the two outfalls.

A rock box or tremie system will be the construction methodology used to place the rock. To protect the outfall, rock will not be dropped from a water depth of more than ten feet above the pipe. Rock dropped from either a rock box or tremie will not impact unshielded areas on the top quarter of the outfall. A pipe shield will be utilized at all times when using a rock box to protect the pipe from the crown down to the  $\frac{3}{4}$  point (10:30 and 1:30 clock positions). If a tremie is employed, the use of a shield is at the discretion of the contractor but rock may not impact the pipe above the  $\frac{3}{4}$  point unless a shield is utilized. Airborne rock dust emanating from material barge will be controlled at all times by keeping the rock pile wetted down. Following the rock placement, the work will be inspected.

5-00-316

Exhibit 3 p 5

detailed description

