

MINUTE ITEM

This Calendar Item 38
was approved
by 38 by
Commission by
0 at its 8/31/78
meeting.

CALENDAR ITEM

38.

8/78
W 9759
Waggoner

AUTHORIZATION TO OFFER
MINERAL EXTRACTION LEASE

APPLICANT:

Mr. Kay Bell, Jr.
1135 Chestnut Street
Redwood City, California 94063

AREA, TYPE LAND AND LOCATION:

Approximately 1,560 acres of submerged
lands in South San Francisco Bay, Alameda
and San Mateo Counties.

PERTINENT INFORMATION:

1. Mr. Kay Bell, Jr. has requested that approximately 1,560 acres of the South San Francisco Bay be made available for shell deposit extraction via competitive public bidding.
2. The proposed lease is for a primary term of 10 years with the option to renew for 2 successive periods of 5 years each.
3. Extraction operations would involve the use of a small hydraulic dredge.

The dredging operations will be conducted between the hours of 12:00 a.m. and 6:00 a.m. to minimize conflict with other possible marine activities and to facilitate barge off-loading during normal working hours. The shell material will be washed with sea water prior to being loaded on the barge. Waste water from washing will be returned to the Bay via discharge lines extending 4 to 8 feet below the surface.

4. The royalty shall be according to the following schedule:

$$R = (0.10 C(T))B$$

Where R = Royalty in dollars and cents paid to the State, and

A 15, 19

S 6, 8

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C = weighed average lease quarter sales price, f.o.b. the dock, per ton, and

T = total lease quarter tonnage sold.

B = Bid factor which shall be no less than 1.0.

The annual minimum royalty shall be \$6,000 for the first 2 years of the primary lease term; beginning with the third year through the end of the primary term, it shall be \$12,000. The minimum royalty shall not be less than \$0.50 per ton.

5. In accordance with Section 6818 of the Public Resources Code, the Director of Parks and Recreation was notified of the proposed lease and has determined that the project will not interfere with recreational use of the littoral lands.
6. Prerequisite Items:
 - a. Initial expense deposit has been submitted by the applicant.
 - b. Area is known to contain commercially valuable oyster shell deposits.
 - c. Project is situated on tidelands identified as possessing significant environmental values pursuant to Public Resources Code Section 6370.1 and is classified in a significant use category, Class C.
 - d. Pursuant to Division 13 of the Public Resources Code, EIR No. 225, SCH 74090292 has been prepared by the State Lands Commission staff. The report concludes that the proposed mineral extraction lease would not have a significant detrimental environmental effect.

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e. REVIEWED BY: All interested agencies and persons have reviewed the EIR report and have indicated that they have no objections to the proposed lease.

1. Department of the Army Corps of Engineers circulated Public Notice No. 75-206-006 on July 12, 1974, and will issue their permit when all State and Federal permits have been issued.
2. San Francisco Bay Conservation and Development Commission have made their permit contingent on the issuance of a lease by the State Lands Commission.
3. California Regional Water Quality Control Board, San Francisco Bay Region, has issued Waste Discharge Requirements Order No. 74-61.
4. Comments on the draft EIR were received from the BCDC and the County of San Mateo. These comments have been addressed and incorporated in the final EIR. All other concerned agencies had no comments.

EXHIBITS: A. Parcel Description. B. Location Map.
 C. EIR No. 225.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT A FINAL EIR HAS BEEN PREPARED FOR THIS PROJECT BY THE STAFF OF THE COMMISSION FOLLOWING EVALUATION OF COMMENTS AND CONSULTATION WITH PUBLIC AGENCIES WHICH WILL ISSUE APPROVALS FOR THE PROJECT.
2. CERTIFY THAT THE FINAL EIR (NO. 225, SCH 74090292) HAS BEEN COMPLETED IN COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970, AS AMENDED, AND THE STATE GUIDELINES AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.

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3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.
4. DETERMINE THAT THE ACTION PROPOSED ON THE SUBJECT PROJECT DOES NOT UNREASONABLY INTERFERE WITH THE MAINTENANCE OR USE OF THE LANDS INVOLVED FOR RECREATIONAL PURPOSES OR PROTECTION OF SHORE PROPERTIES.
5. CLASSIFY THOSE SUBMERGED LANDS SITUATED IN SOUTH SAN FRANCISCO BAY AND DESCRIBED IN EXHIBIT "A" AS LANDS CONTAINING COMMERCIALY VALUABLE MINERAL DEPOSITS.
6. APPROVE THE PROPOSAL, NOTICE OF INTENTION TO OFFER AND FORM OF LEASE ON FILE IN THE OFFICE OF THE COMMISSION, AND BY REFERENCE MADE A PART HEREOF.
7. AUTHORIZE THE OFFERING, PURSUANT TO COMPETITIVE PUBLIC BIDDING, OF THE AREA OF SUBMERGED LAND SITUATED IN THE SOUTH SAN FRANCISCO BAY, PARTIALLY IN ALAMEDA COUNTY AND SAN MATEO COUNTY, MORE PARTICULARLY DESCRIBED IN EXHIBIT "A".

EXHIBIT "A"

Proposed Lease Area Description

A parcel of submerged land in the South San Francisco Bay lying southerly of the southern boundary of the City of South San Francisco, partially in San Mateo County and Alameda County, more particularly described as follows:

W $\frac{1}{2}$ of Section 4, all of Section 5, and all of Section 6 excepting the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of said Section 6, all in T. 4 S., R. 3 W., M.D.B. & M., containing 1560 acres more or less.

EXHIBIT "C"

FINAL ENVIRONMENTAL IMPACT REPORT

AN ACTION TO ACCEPT COMPETITIVE
BIDS ON A MINERAL EXTRACTION
PROJECT FOR OYSTER SHELL DEPOSITS
IN SOUTH SAN FRANCISCO BAY

SCH 74090292

Prepared by the
Staff of the State Lands
Commission

July, 1978

STATE OF CALIFORNIA
STATE LANDS COMMISSION
FINAL ENVIRONMENTAL IMPACT REPORT

Minerals Extraction Lease W 9759

1. Project and its Location:

The State Lands Commission has received an application to competitively bid a mineral extraction lease for oyster shell deposits in South San Francisco Bay. The project would consist of a hydraulic dredging operation of not to exceed 80,000 cubic yards of shell each year, from one location in South San Francisco Bay.

The lease area is a rectangular area located in the middle of the Bay in both San Mateo County and Alameda County, just north of the San Mateo Bridge. See Figure I.

2. Statement of the Objectives Sought by Proposed Project:

The objective of the proposed project is to extract approximately 80,000 cubic yards of shell annually from the Bay, to be used by the sugar companies in refining beet sugar. There are nine such companies in California.

3. General Description of a Typical Operation:

Shells will be extracted by propelling a small dredge by tugboat, slowly forward across the lease area. It will be equipped with a 12-inch suction dragline which will penetrate an area in the path of the suction head of approximately 2 to 3 feet wide and 1.5 feet deep. It is estimated the average thickness of the shell deposit in the proposed lease area is 6 to 8 feet.

This material is then brought to the surface and through a separate pumping line clean Bay water is utilized to wash the shell prior to its being dumped on the barge.

The waste water lines range from four to eight feet in depth and discharge between 20% and 30% of the extracted material to the Bay through the washing process. This residual consists primarily of mud, although certain minerals, dissolved oxides and marine organisms are present to varying degrees.

The following is an outline of the scope of the proposed operations:

It is expected that dredging under the proposed lease would be done periodically (50 to 80 times) during each lease year. Each dredging would be conducted for a five-hour period only.

The equipment expected to be used on the lease would penetrate the Bay muds to a depth of 1.5 feet and the limit of the proposed dredging would be to 18 feet below M.L.L.W. (mean lower low water).

Such equipment would extract 200 cubic yards per hour, or 1000 cubic yards in the five-hour period. Eighty dredging periods would result in at most 80,000 cubic yards production in one year.

During each dredging period an area of less than one-half acre would be dredged, and each year 30 acres total at most would be dredged.

4. Description of the Environment:

a. Location: The proposed project will be located in South San Francisco Bay. The San Francisco Bay System, which is located on the west coast of central California is formed at the convergence of the Sacramento River, San Joaquin River, and other tributaries. The Bay system is surrounded by the coastal ranges, which consist of three well-defined mountain axes in the area. The largest valley in the San Francisco Bay Area is the Santa Clara, into which extends the southern arm of the San Francisco Bay system.

b. Geology: San Francisco Bay is underlain by a complex system of warped and faulted bedrock of the Franciscan formation. Common rock types are greywacke, arkosic sandstone, siltstone, shales, chert, and greenstone. The age of the bedrock is Late Cretaceous, approximately 180 million years old.

Overlying the Franciscan bedrock is a sedimentary sequence referred to as older and younger bay mud. Thicknesses vary for the bay mud from 200 to 700 feet. The bay muds are principally composed of silt and clay with occasional lenses of sands and gravels. Large deposits of oyster shells also occur in the younger bay mud. These bay muds have been defined by Thesher as follows:

"Studies of the sediments in San Francisco Bay show that these deposits accumulated to thicknesses in excess of 300 feet. The deposits are principally clay and silt, with minor lenses of sand and gravel. The grain size of the sediments is fairly uniform both perpendicular to and parallel with the bedding. The informal stratigraphic units used in this report differ primarily in their degree of preconsolidation, density and compressive strength. Contours on the upper surface of bedrock, the older bay mud and the upper member of the younger bay mud indicate that all have been eroded to produce considerable relief.

The older bay mud and the semi-consolidated member of the younger bay mud are preconsolidated to a density greater than would be expected from the weight of the overlying sediments. These units are overlain by a normally consolidated member of the younger bay mud. It is postulated that the preconsolidation was caused by desiccation in air resulting from fluctuations in sea level. These changes in sea level may have been caused by the repeated storage and release of sea water in glacial ice."

The proposed project area lies within a seismically active zone as defined by California Division of Mines and Geology. The San Andreas Fault lies approximately seven miles west of the area, and the Hayward and Calaveras Fault systems are approximately 14 miles east. The occurrence of a seismic event would have little or no impact on the project.

c. Biological Environment: The biological community of San Francisco Bay is well known. Various species of polychaeta (marine worms) inhabit the benthos in addition to species of other benthic organisms, such as clams, oysters, crabs and gastropods.

At times, especially during periods of high tides, various fishes inhabit the area feeding upon small marine organisms. Striped bass, flounder, skate, sturgeon, and other fishes utilize the project area. Figure II lists various marine invertebrates and fishes which may inhabit the area.

The area within the proposed project is rarely, if ever, exposed during even the lowest tide and as a consequence shore birds are seldom present. However, many open-water birds are known to utilize the area for both feeding and resting. Figure III lists those birds inhabiting the area.

Marine flora is not known to exist in the project area. The area is quite turbid and as a result very little light penetration occurs. Various phytoplankton probably occur in the project area, but species are not known.

d. Climate: The climate of the San Francisco Bay area is classified as Mediterranean. It is characterized by mild dry summers and cool moist winters. The climate of the Bay area is largely controlled by the surface temperatures of the Pacific Ocean. During the winter, a typical marine climate which is expected for its latitude occurs. They are usually mild and moist and approximately 18 inches of precipitation occurs during the winter months. The average annual temperature is nearly 66 degrees and has a narrow range. The prevailing wind is from the west to the northwest. The wind is light in the morning but afternoon winds are stronger, with average velocities between 7 and 8 miles

FIGURE III

FAUNA IN PROJECT AREA - OPEN WATER

Birds of Open Water Areas*

Common Resident

Pied-billed Grebe
Double Crested Cormorant
Mallard
Ruddy Duck
Coot
Western Grebe
Forsters Tern

Common Seasonal

Horned Grebe
Eared Grebe
Pintail
Canvasback
Greater Scaup
Lesser Scaup
Bufflehead
White winged Scooter
Surf Scooter
Herring Gull
Bonapartes Gull

*Information obtained from San Mateo County
Parks and Recreation Department - limited to
most common species by author.

FIGURE II
FAUNA IN PROJECT AREA - OPEN WATER

Marine Invertebrates*

Dog Whelk (Mud Snail)
Channeled Whelk
Little Neck Clam
Gem Clam
Opposum Shrimp
Black Tailed Shrimp
Ghost Shrimp
Dungeness Crab
Blue Mussel
Olympic Oyster
Limpet
Checkered Feriwinkle Snail
Eastern Slipper Snail
Flat Slipper Shell
Wrinkled Rock Shell
Oyster Drill
Moss Animal

Fishes

Striped Bass
Sturgeon
Leopard Shark
Brown Smoothhound Shark
Bay Sting Ray
Surf Perch
Sculpins

*Information obtained from San Mateo County
Parks and Recreation Department - limited
to most common species by author.

per hour, except in the summer when velocities average 13 miles per hour.

e. Tides: Astronomic tides experienced in the project area range from mean high high water of approximately 7 feet to a mean low low water of minus 2.5 feet. Mean sea level is approximately +4 feet.

f. Aesthetics: The proposed project site is located in the open water area of South San Francisco Bay. The visual characteristic of this area is large open water, which may also have pleasure boat traffic. The proposed site is located in view of shoreline residents and automobile traffic along the San Mateo-Hayward Bridge.

Background noise levels were measured at the proposed site. The tests were conducted 1/4 mile north of the San Mateo-Hayward Bridge and 100 feet from the shore. This is the closest shoreline to the proposed dredging grounds. Tests were done with the Simson Model 885 Sound Level Meter, with "A" weighting and slow meter response. Tests were taken at 1600, 2400 and 0600 hours.

Readings of 60-70 D.B. were normal background noise levels with occasional jumps to 80 D.B., depending on traffic on the San Mateo Bridge.

Airplanes passing overhead landing at the San Francisco Municipal Airport gave a raise to 75-85 D.B., depending on the type of plane and how close it was to the recording unit.

g. Hydrology: The hydrological conditions of South San Francisco Bay are characteristic of most salt water shallow bays and mud Flats. Sediment influx today is primarily from the interchange between the North Bay and South Bay. These sediments are primarily silt and clay size. Some streams contribute other sediments but this is quite insignificant when compared to the influx from the north.

South San Francisco Bay is usually in a turbid condition due to wind and tidal action on the tidal mud flats. Transparency measurements obtained by using a Secchi disk were between 0.24 and 0.48 meters before the disk disappeared from sight at Parcel 1, and between 0.48 and 0.72 meters at the site.

Water quality in South San Francisco Bay is quite variable but as a general statement, it can be said that the quality decreases as one proceeds southward. Table I lists water quality data in the area.

TABLE I
WATER QUALITY DATA

1. Yearly Temperature Variation	10 degrees C. (winter) - 20 degrees C. (summer)
2. Suspended Solids	80-90 mg/L
3. Chlorosity*	15-17 g/L
4. Dissolved Oxygen	
Concentration	5.7 mg/L
%Saturation	80-90%
5. Biological Oxygen Demand	1 mg/L
6. Ammonia Nitrogen	Oil = 0.2 mg/L
7. Nitrate Nitrogen**	.35 mg/L
8. Phosphate	1.0-1.5 mg/L
9. Dissolved Silica	5-6 mg/L
10. Coliform Bacteria	100 MPN/100 ML

* Varies with depth, increase by less than
25 mg/L from top to bottom

** Varies seasonally 0.2-0.5 mg/L

h. Historical: Quaternary oyster shell deposits which constitute an important but not widely known mineral resource are exposed over a large portion of San Francisco Bay. Early use of oyster shells from the San Francisco Bay was for aesthetic and ornamental purposes but until the mid 1920's there was no concentrated effort to develop the shell deposits for any extensive commercial use. Exhibit C indicates the distribution of oyster shells in San Francisco Bay.

Prior to 1920, commercial production of oysters from the Bay was carried on extensively. It was discovered that the native oyster (*Ostrea Lurida*) was present in tremendous numbers and although identical with the Olympia oyster, was not profitable for commercial extraction. The Bay appeared to be a marginal habitat and the oyster did not grow to marketable size.

In 1870 or shortly thereafter, the seed of the eastern oyster (*Ostrea Edulis*) was implanted in the Bay and although beds in the North Bay were unproductive and had to be abandoned, it was found that in the South Bay eastern oysters produced abundantly and grew to such large size that commercial harvesting of the oyster was quite profitable.

Subsequent to that time, however, pollution of the Bay waters from the discharge of raw sewage and other filtration adverse to oysters brought an end to the production of oysters as a commercial product and led to the production in lieu thereof of extensive shell excavation for use in the manufacture of cement, soil conditioners and related products.

The results of this prodigious growth of the eastern oyster added to the existing shell deposits and left a large area of shell deposits in South San Francisco Bay.

As early as 1924, as a matter of historical record, the Bay Shell Company dredged shells for livestock feeding and soil conditioning the area between Alviso and the San Mateo Bridge. Shortly thereafter, Ideal Cement Company, formerly Pacific-Portland Cement Company, commenced a large scale operation of shell extraction for the manufacture of cement, livestock feed and soil conditioner. This operation was by far the most extensive of any in the South Bay area but like the majority of the other shell extractors they have completely discontinued any dredging operation for the purposes of obtaining shell from the South San Francisco Bay.

It has been estimated that in excess of 30,000,000 tons of shell have been dredged from San Francisco Bay since dredging operations first commenced in 1924 and as indicated above, most of this has been taken in the vicinity of the San Mateo Bridge east of the main ship channel. There is some evidence to indicate that dredging around the Dumbarton Bridge was carried on to a limited extent.

Most of the knowledge of the distribution, character and reserves of shells in the Bay is based upon indirect evidence or information obtained from studies not directly related to the study of shell deposits. Due to the absence of valid scientific data, estimates as to the amount of shell deposits remaining in the Bay vary widely and the quantity in a specific area likewise show wide variation due to the thickness of the shell accumulation and the interspersment of mud in these areas. It has been conservatively estimated that on the basis of the shell extraction which occurred at the height of the dredging operations that the available shell reserves appeared to be quite adequate to support shell operations for many years to come.

No historical or archeological sites are known to exist at the project site.

5. Environmental Impact of the Proposed Action:

Since the project is of relatively small size, it should have minimal significant impacts upon the environment. Generally the impacts which will occur are those on marine biota, water quality, air quality, and the aesthetic qualities of the bay.

During the dredging operation certain marine organisms will be removed by the action of the dredge. Benthic organisms will be removed in the dredging area. This amount is relatively small and can be mitigated against. Planktonic organisms in the water column may be removed by the dredging. This could cause some disruption of the feeding habits of some filter feeders in the area. Additionally, while the dredge is operating, birds may be frightened from the area for a short time until they become adjusted to it.

A significant impact could occur if the dredge encounters sediments which have high concentrates of heavy metals and other toxicants. However, this is unlikely due to the dynamics of the area. Recent sediments which most usually contain significant concentrates of heavy metal or toxicants, are not likely to be deposited in the lease area because of the wind waves and tidal currents. Sediment sampling in the region indicates that the samples have concentrates of toxicants and heavy metals near those of background levels, except in areas of quiet water.

Water quality will additionally be affected by increased turbidity in the area as a result of the discharge of the wash from the dredge. This will be from the intermixed silty-clays and underlying the shell fragments. Most of this should flocculate and settle rapidly. Those which do not settle should have little or no impact because of the highly turbid conditions already existing.

The impacts from the dredging operation on existing air quality should be insignificant. A small amount of particulates, hydrocarbons and NOx will be released from the dredge pumps and engines.

The aesthetic impact of the operation will be both visual and audible. Visually, the project area can be seen from both the shoreline area and the San Mateo-Hayward Bridge. The dredge will be a noncharacteristic sight in the area. However, the area is frequented by other boat traffic. The dredge will only be on site for five or six hours a day for 5 to 7 days per month.

Noise generated by the dredging operation will be insignificant. Noise levels would not likely exceed that of tugboat engines. The motors used in the dredging operation are completely enclosed including the dredge pumps and the one washing pump. It is unlikely that anyone within 100 yards of the dredge would be able to differentiate it from any other twin engine boat. Equipment proposed for this dredging operation was tested for noise for a 24-hour period full throttle in the proposed dredging area with a Simson Mode 885 Sound Level Meter, "A" weighted and slow response. The meter showed no response and the machinery could not be heard from the shore locations.

The dredging operation could become a navigation hazard to small craft. If the dredge were operated during high use periods for the Bay, the holding barge and the dredge could interfere with activities of pleasure craft.

6. Any Adverse Environmental Effects Which Cannot be Avoided if the Proposal is Implemented.

There may be periodic local siltation of the Bay Waters in the wake of the dredge and barge, including mud and sediments which are released during the washing process, which may result in resuspension of some pollutants.

7. Mitigation Measures Proposed to Minimize the Impact:

The following mitigation measures will be required under the terms of the proposed lease.

- a. Pipelines returning materials from the washing operation to the Bay will be positioned at the optimum operating depth, which will be governed by the depth of the water in the area of operation. The average depth for the discharge line in the proposed lease area is anticipated to be 6 feet.
 - b. The lessee will meet the requirements of the California Regional Water Quality Control Board for waste discharge.
 - c. The lessee will be required to maintain an active permit with the San Francisco Bay Conservation and Development Commission.
 - d. Lessee will operate the dredge only during the hours of low priority usage for the Bay, primarily between the hours of 12:00 a.m. and 6:00 a.m. Such operating periods may be modified by the lessor if significant interference with other Bay usage occurs.
 - e. Frequent on site inspections by the staff for conformance with all lease provisions will be made.
8. Alternatives to the Proposed Action:

The No-Project alternative would require the import of lime in large quantities from Nevada and Arizona. Such imported lime would cost in excess of \$40 per ton delivered to California, whereas locally dredged shell can be delivered for considerably less cost and with considerable savings in energy consumption.

Another alternative is the resumption of discontinued limestone quarrying as a substitute for shell in poultry and livestock feed. Assuming a nearby limestone quarry were available, the significant adverse impacts from this would be greater than those occurring from this project. Quarrying has significant impacts upon the land, in that a large area is scarified considerable wildlife habit is removed, and greater amounts of erosion take place.

Additionally, significant visual impact may occur, an increased level of particulate matter will be unleashed to the air from mining, and the possibility of surface and ground water degradation.

Other Project locations: Other suitable locations in the Bay for carrying out the project are available but would appear to present more adverse impacts upon the environment than the proposed project as they are either near marsh land, closer to the shore and populated areas or could interfere with pleasure boating activities.

9. The Relationship between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity:

San Francisco Bay, many years ago, ceased to produce any sizable quantity of shell fish primarily due to pollution and lack of flushing action. Commercial harvesting of shell fish products was not only unfeasible but the health quality of the product was highly questionable. With ongoing anti-pollution requirements and other corrective measures it is probable that the long term productivity of the Bay can be enhanced.

The short term use of the oyster shell bed on such a relatively small scale dredging operation to provide an essential resource required now is not likely to interfere substantially with this long term productivity and is less consuming of resources available than alternates which are of themselves short term usage.

10. Any Irreversible Environmental Changes which Would be Involved in the Proposed Action Should it be Implemented:

The shell deposits once removed will no longer be available for other uses.

11. The Growth-Inducing Impact of the Proposed Action:

The project has no growth inducing impact. The proposed shell will only be used to replace shells presently imported from Texas.

The proposed project area exists in an area which historically has been dredged for oyster shell production. Presently no operations are occurring in the area, but this and an adjoining pending application with the State Lands Commission have been filed. Both dredging operations would occur in the same region.

12. Socio-Economic Effect:

The project will generate no population growth, will require no added or expanded local governmental services and will not necessitate additional expenditures of tax funds. It will, conversely, add revenue to the State through payment of royalty on the extracted shell and increases in corporate and other taxes, paid by the project operators.

13. Energy Conservation

Energy conservation would occur as a direct result of this project by decreasing the amount of imported shells from Texas, thus reducing fuel used in transportation.

14. Organizations and Persons Commenting:

- a. State Clearinghouse
- b. Resources Agency
- c. Public Health Department
- d. Department of Transportation
- e. San Francisco Bay Conservation and Development Commission
- f. San Mateo County

Comments received Through the Commenting Procedure:

i. Responses to San Mateo County Comments.

A. In order to meet the requirements of C.E.Q.A., the following things should be included in the E.I.R.:

1. A statement containing the names and qualifications of the E.I.R. preparers.

Response: The Draft E.I.R. was prepared by the State Lands Division staff with help from the applicant.

2. A section discussing any "irreversible environmental changes" caused by the project.

Response: See Page 13.

B. The technical adequacy of the E.I.R. would be enhanced by greater depth of discussion in the following areas:

1. In the section on water quality, information should be included regarding the chemical composition of the bay mud in the project area, particularly noting the presence of heavy metals and pesticide residue. There should be further discussion of impacts by any toxic compounds present in the bay mud which would be stirred, and possibly reintroduced into the water. All impacts related to this issue, including increased siltation, should be discussed.

Response: The sediments encountered in the shell areas of South San Francisco Bay have chemical qualities much like those of natural sediments. Heavy metals will generally not settle in the shell areas because of highly agitated condition.

2. Noise impacts should be further discussed and quantified.

Response: Noise impacts and data have been incorporated, Pages 5 and 11.

3. A delineation of the benthic organisms which have been identified in the project area would be helpful, together with a statement of the health of such benthic communities.

Response: A list of benthic community animals is given in Figure II. The general health of the population is unknown.

C. The following information would greatly increase the adequacy of the E.I.R.:

1. An analysis of other oyster shell dredging operations in the bay would help to determine cumulative impacts.

Response: This information has been incorporated into the final E.I.R. on Page 12.

2. A statement of the terms of the lease would assist in assessing the project.

Response: The lease form will include the operating conditions, limitations and mitigation measures provided in the E.I.R.

II. Answers to comments for San Francisco Bay Conservation and Development Commission.

A. To better understand the impact on the Bay and the oyster shells of the proposed dredging especially in light of similar operations, the report should discuss the following:

1. What is the total quantity of oyster shells estimated to be in San Francisco Bay and in the rest of California? What quantity of oyster shells are estimated to be added per year to the total reserve of shells?

Response: Estimates indicated that over a billion cubic yards exist, of which 140,000,000 cubic yards are in San Francisco Bay.

2. What is the relationship of live oyster beds to the oyster shells to be dredged? Are significant numbers of live oysters disturbed or destroyed during dredging of oyster shells?

Response: No live oysters inhabit the area.

3. How many oyster shells are now annually dredged from San Francisco Bay and from other areas, if any, of California?

Response: None on State land.

4. What is the total projected amount of oyster shells likely to be dredged over the next twenty years from San Francisco Bay and from other areas of California?

Response: Pending applications in South San Francisco Bay, if approved, could result in 150,000 cubic yards of dredged oyster shells per year.

5. Will the proposed project and other oyster shell dredging operations be likely to continue over a long time or will the leases terminate at some specific time?

Response: The proposed lease is for a 5-year primary term, with a right for 3 five-year renewal periods.

6. When the total present and projected dredging of oyster shells is compared with the total amount of oyster shells available, will the project contribute to a permanent loss of a significant resource?

Response: The State Lands Division estimates that 140,000,000 cubic yards of clean shell remain in South San Francisco Bay. This lease represents a commitment of 1,600,000 cubic yards or approximately 1 1/2 percent of the remaining shell reserves.

- B. With regard to the way in which oyster shell dredging is done, the report would be more helpful if it included answers to the following:

1. What type of dredge will be used in the project? What types of dredges are used in other oyster shell dredging operations?

Response: A hydraulic dredge will be used; see Project Description Page 1.

2. What will be done with non-oyster shell materials that are dredged? If these materials are returned to the Bay, will the resettling interfere with life processes of live oysters or other organisms?

Response: Approximately 20-30 percent of the dredged clastic material will be returned to the Bay. These will settle rapidly, thus interference with organisms will not be a significant problem. Any organisms which inhabit the area have already adapted to the turbid conditions.

3. What quantity of non-oyster shell materials that are returned to the Bay will be likely to remain in suspension? Will the suspended materials cause degradation of water quality? If so, is the amount of degradation significant?

Response: Twenty to thirty percent will be returned and will create no significant impact. See Page 11.

- C. What effect will oyster dredging have on other Bay organisms? For example, the draft indicates that some of the areas proposed for dredging are exposed at low tide. Such areas may provide a good habitat for feeding birds. Would the sort of project proposed have any significant effect on such feeding grounds?

Response: The proposed project will have no significant impact on feeding areas. At low tide, when the area is partially exposed, no operations will be conducted. Additionally, the area proposed for lease is of low biological productivity.

- D. Is any sort of monitoring system proposed in connection with this and any similar projects which will review the amounts of shell being dredged and whether any environmental damage is occurring as a result of the operation?

Response: Yes, See mitigation measure.

- E. What mitigation measures are being proposed in this project? The time at which the dredging is to occur, as mentioned in the section, would not appear to mitigate for the loss of the shell and for any decrease in water quality. It is the opinion of the BCDC staff that specific mitigation proposals should be directed at these two possibly adverse environmental impacts. The noise of the dredging and the time at which it is to occur might be better dealt with in the environmental impact section. In this regard, is it possible that noise caused by dredging would carry further at night due to a lower ambient noise level?

Response: Mitigation measures proposed for the project are found on Page 11. Due to the turbid condition of the region and the kind of sediment (clastics) returned to Bay, the water quality impacts will be temporary and insignificant. However, the lessee will have to meet discharge requirements of the California Regional Water Quality Control Board.

Alternatives to the project are discussed on Page 12 of this report. In the opinion of the State Lands Division, the environmental impacts of the proposed project are less significant than those of the alternatives and thus more easily mitigated.

Noise impacts are discussed on Page 11.

F. What are the environmental effects of this project as opposed to the environmental effects of obtaining the necessary calcium elsewhere? The draft evaluates the project in terms of cost, but not in terms of disturbance to Bay ecosystems. On the basis of such a disruption, and since there are other markets available for the calcium, is there a sufficient cost-benefit ratio to justify dredging in the Bay?

Response: The environmental impact of this project, as analyzed in this report indicates that no significant impacts will occur. Alternatives are discussed on Page 11.

G. Have the following agencies been contacted for their views on this project and Draft Environmental Impact Report?

1. Federal Environmental Protection Agency, Water Quality Section.

Response: Yes.

2. Federal Bureau of Sports Fisheries and Wildlife.

Response: No, however, the State Department of Fish and Game have reviewed and commented on this report.

3. Affected City jurisdictions and the Counties of Alameda and San Mateo?

Response: Yes.