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April 30, 2008

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CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

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California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Susan Craig, Coastal Planner
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060-4508

Re: Cannery Row Marketplace LLC
Application for Coastal Development Permit
Formerly CDP Application No. 3-06-065
CDP Application No. 3-08-013

Dear Mr. Douglas and Ms. Craig:

Thank you for working with us on a withdrawal and resubmission for the Ocean View Plaza Project to allow for us to respond to and offer additional analysis to clarify aspects of the Coastal Commission staff report dated February 21, 2008. We note the new application for the project is CDP Application number 3-08-013. The project has not been revised from the previous application.

The letter is organized as follows and thoroughly addresses all issues raised in the February 21, 2008 staff report:

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1. Public Access and Coastal Act Consistency.

Pursuant to the Cannery Row Land Use Plan ("LUP"), the project is required to provide certain public access. As demonstrated below, the project is consistent with both the certified Cannery Row LUP and the Coastal Act.

A. The Certified Cannery Row LUP Is Consistent with the Coastal Act.

In its Standard of Review section on page 9, the Coastal Commission staff implies that the Cannery Row LUP is out of date and inconsistent with the Coastal Act. When the Coastal Commission certified the Cannery Row LUP in 1981, it did so only after confirming that the plan was consistent with the Coastal Act. For each subsequent amendment, the Coastal Commission reviewed the plan with the amendment and only confirmed the amendment if the resulting land use plan would be consistent with the Coastal Act.

This process most recently happened just prior to the approval of this project. In a December 18, 2003 staff report, Coastal Commission staff recited the history of the Cannery Row LUP and its amendments. Coastal Commission staff noted that when it received the City of Monterey's 2001 proposed amendments, staff reviewed the Cannery Row LUP and the amendments and concluded that the amendments would result in the plan being internally inconsistent. The staff explained that the City had made some revisions in response to the staff's requests, and that in its 2003 submittal, the City had presented amendments which were consistent with the Coastal Act. These most recent amendments included some amendments to the public access section and to Figure 4 of the public access section. Figure 4 of the public access section identifies which LUP provisions apply to which locations.

At its January 14, 2004 meeting, the Coastal Commission approved and recertified the Cannery Row LUP as consistent with the Coastal Act. The policies regarding the location of this project were recertified without being changed. The City of Monterey applied the approved and recertified Cannery Row LUP to the project when it approved the project on June 1, 2004.

The Cannery Row LUP identifies four different access standards which may apply, depending on the location of the property. Figure 4 (enclosed and highlighted for your convenience) demonstrates that the property is located in the area of Cannery Row which is subject to the Rocky Shoreline and Promontories section of the Public Access portion of the LUP.

Coastal Commission staff has used the requirements for the new Cannery Row Hotel, Bubba Gump's, the Monterey Plaza Hotel and Macabee Beach to make comparisons with the Ocean View Plaza, yet the designations and corresponding constraints applicable to those projects are clearly delineated and are distinctly different from those that are applicable to the subject site. For example, the Coastal Commission staff notes that Cannery Row Hotel, Bubba Gump's and the Monterey Plaza Hotel were all required to provide access along the entire backs of their structures in accordance with the LUP. The cited requirement applies only to development located in the areas identified as "Backs of Structures" on Figure 4 of the LUP, and these projects are all located in such areas. See designation and description of indicators in legend on Figure 4, Public Access in LUP. The Ocean View Plaza project is not located within an area designated as "Backs of Structures" on Figure 4; instead, as noted above, it is located in an area subject to the Rocky Shoreline and Promontories section. Further note that Figure 4 designates

viewpoints for Bubba Gump's and the Cannery Row Hotel sites, but it does not designate *any* viewpoints for the Ocean View Plaza property.

B. The Ocean View Plaza Project Exceeds the Vertical Access Requirements.

For vertical access across the property toward the shore, sub-section 2 of the Rocky Shoreline and Promontories section states as follows:

> Require improvements to and a public access easement (a minimum width of ten feet) to the rocky promontory on the site of the former San Xavier Cannery as a condition of new development.

The Ocean View Plaza project provides considerably more than a ten foot wide easement to the rocky promontory. The vertical access to the rocky promontory is through a public access easement over the entire Community Park on the inland parcel which connects the Recreational Trail and Cannery Row Street. The Community Park is approximately 150 feet wide (15 times the requirement). The vertical public access easement continues on the bayside parcel through the entire History Plaza. The History Plaza is 40 feet wide at the entrance from Cannery Row Street (plus another 5 feet for a handicap ramp), and it is 190 feet wide where it overlooks the rocky promontory. So the vertical access provided by the project is 4 to 19 times what the LUP requires.

Two stairways also provide access to the shoreline from the project. These stairways were provided in response to a request made by the Coastal Commission staff at a site visit. One stairway is located at the bayside edge of the History Plaza between the History Center and Building B. The second stairway is accessible under Building A from the bayside level promenade to the water.

Wheelchair access is also provided through the Community Park as an integral access with Building E on the north side of Community Park. Wheelchair access from Cannery Row Street to the promontory is provided at the edge of the retail plaza for Building A and the History Plaza. The wheelchair access on the bayside parcel serves both the retail plaza of Building A and the History Plaza.

C. The Ocean View Plaza Project Complies with the Lateral Access Requirements.

For lateral access across the shoreline, sub-section 3 of the Rocky Shoreline and Promontories section states as follows:

> Require improvements to and a public access easement (a minimum width of ten feet) along lands adjoining the rocky shoreline between the rocky promontory on the site of the former Carmel Canning Cannery (south of Macabee Beach) and the rocky promontory on the site of the former San Xavier Cannery as a

> condition of new development. On the site of the former Carmel Canning Cannery where a building presently exists along this stretch of rocky shoreline, the required improvements and access easement are to be provided on the landward side adjoining the existing buildings.

The former Carmel Canning Company site is now the home to El Torito. In accordance with this section, we have provided a ten foot wide public access easement across the entire rocky shoreline. We have also provided two staircases to facilitate access to this easement. The shoreline lateral access connection to the access way under the Chart House will be a continuation of the existing pathway at the Charthouse. Likewise, the shoreline lateral access will be continuous to the El Torito property to the north.

D. The Ocean View Plaza Project Exceeds the Pedestrian Plaza Requirements.

For a pedestrian plaza, sub-section 4 of the Rocky Shoreline and Promontories section states as follows:

> Require improvements to and a public access easement for a pedestrian plaza (a minimum of 250 square feet for each 100 linear feet or portion thereof of front frontage along the rocky promontory south of Macabee Beach and the rocky promontory on the former San Xavier Cannery site) as a condition of development of parcels along the rocky shoreline.

For Ocean View Plaza, sub-section 4 requires a plaza of 1,375 square feet on the project site. The project exceeds that requirement by providing a plaza of 13,021 square feet, almost ten times the required amount. Then there is also the Community Park on the inland side—it is 13,796 square feet. Considering the Community Park proposed on the inland portion in conjunction with the bayside History Plaza, the total square footage designated to dedicated public access is twenty times the square footage requirement for a pedestrian plaza in the LUP.

Additionally, the plaza includes a History Center which will provide the public a place to learn about the history of Cannery Row. Moreover, all of the windows facing the bay in Building A and Building B on the street level are contemplated as restaurant use, a visitor serving activity, providing even more public access. All in all, Ocean View Plaza not only provides unheard of multiples of the required public access uses, but also creates an unprecedented Recreation Trail-to-Pacific Ocean public access and view corridor that even the Coastal Commission staff concedes will attract pedestrians in great numbers.

2. Water Supply and Coastal Act Consistency.

A. The Project Is Consistent with Coastal Act Section 30250.

Coastal Act Section 30250:

> **(a)** New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

B. The Project Is Located Within an Existing Developed Area and It Provides Badly Needed Urban Redevelopment.

Consistent with section 30250, the Ocean View Plaza project is "located within, contiguous with and in close proximity to existing developed areas". In fact, the project is the much needed redevelopment of an urban site in the middle of Cannery Row which has been a graffiti ridden eyesore for years.

C. Adequate Public Services Will Be Provided.

The area is able to accommodate the redevelopment with a desalination facility to provide the water. Also consistent with the staff's interpretation of section 30250, the desalination facility will be owned and operated by a public entity. Pursuant to the Coastal Commission's requirement, the City of Monterey applied to the Local Agency Formation Commission of Monterey County ("LAFCO") to form the Ocean View Community Services District ("CSD"). LAFCO completed the formation of the CSD in December 2005. The CSD will take ownership of the desalination facility after it is built and operating. The water services for the project will therefore be provided by a public entity.

D. Various Agreements and Laws Protect the CSD.

Coastal Commission staff's report refers to various agreements that protect the CSD from liability. Cal-Am has waived its right to provide water to the project until such time as Cal-Am can legally do so. Outside legal counsel for the City of Monterey drafted, reviewed and negotiated an abundance of protections for the City of Monterey and for the CSD in an indemnification agreement.

As one of the protections in the indemnity agreement, the CSD will not take ownership of the desalination facility until after it is built and operating. The developer must provide the City with certifications from the equipment manufacturers, contractors and providers for the components of the desalination facility that the facility will provide an adequate and reliable source of water. The developer must indemnify the City from any claims arising from the formation of the CSD, construction, testing and operation of the water system prior to dedicating it to the CSD. The developer must indemnify the City from any defects in the construction of the water system; and the developer must obtain extended warranties on the materials and equipment. The staff correctly explains that the CSD has numerous powers under state law which also protect it.

As the staff also notes, the CSD will be retaining the services of a State-certified water treatment plant operator to operate the desalination facility. The CSD has insurance in place. The technical memoranda supplied by various experts involved in the project make it clear that the desalination facility will be very reliable. As soon as Cal-Am is able to provide water to the project, the CSD will dissolve. The CSD's potential liability has thus been minimized.

The staff report includes an unfounded conclusion that a court might pierce the community services district and take action against the City of Monterey. The law does not appear to provide any authority for a court to take any such action; indeed, we have been unable to locate any precedent which would support the staff's conclusion.

E. LAFCO and the Monterey County Superior Court Rejected the Coastal Commission Staff's Concern that the Formation of the CSD Would Be Growth Inducing or Have Any Impact on a Regional Water Supply Solution.

As noted in the staff's report, LAFCO of Monterey County is responsible for discouraging urban sprawl and encouraging the orderly formation of local government agencies. The City of Monterey applied to LAFCO of Monterey County to form a community services district to own and operate the desalination facility. LAFCO's staff report for the CSD formation, the minutes and notes from the December 27, 2005 public hearing, and LAFCO's resolution approving the formation of the CSD all demonstrate that the Coastal Commission's concerns were considered and addressed. LAFCO found that no additional EIR was required because the formation of the CSD was not a new project and/or the common sense exception applied. LAFCO found that the financial analysis by EPS and CH2M Hill was sufficient for its consideration, and LAFCO rejected the Coastal Commission's concern regarding the economic feasibility of the CSD.

LAFCO found that formation of the CSD would not impede efforts to develop regional solutions to address water shortages because the CSD would only provide water to the Ocean View Plaza, and as soon as a regional water source was available, the Ocean View Plaza would connect to that source. LAFCO rejected the Coastal Commission's concern that the CSD formation would be cumulatively growth inducing, finding that the CSD formation would not create a need for facilities or activities outside the scope of the Ocean View Plaza EIR.

As stated in the Resolution of the Local Agency Formation Commission of Monterey County Making Determinations and Approving the Proposed Ocean View Community Services District, Resolution No. 05-27,

> The project is essential to allowing the planning, orderly and efficient patterns of urban development, by creating an alternative water supply in light of Cal-Am's present inability to serve the area. By creating a water supplier to the area, the project allows for valuable infill development, restoring a blighted area and preventing urban sprawl, consistent with the policies and priorities set forth in Government Code section 56377.

LAFCO's determination was upheld by the Monterey County Superior Court in September 2006.

F. The Water Costs for the Desalination Facility Customers Are Not Excessive.

We previously provided data to the Coastal Commission staff that Cal-Am's water rates have been artificially low and were being dramatically increased so that Cal-Am could address its infrastructure issues and provide water for its service areas. Although the Coastal Commission staff report contains many pages regarding Cal-Am's infrastructural issues, it does not mention that Cal-Am has applied to the California Public Utilities Commission for a significant rate increase which will be comparable to the CSD's water costs.

As the two charts below demonstrate, the water costs for the desalination facility customers are not excessive. Given that the market rate units are likely to have comparable prices to the residences in the Cal-Am Bishop and Hidden Hills service areas, it appears that the water costs for those customers are the appropriate comparisons. The monthly water costs for the market rate units are comparable to the monthly water costs for residents of the Cal-Am Bishop and Hidden Hills service areas without factoring in Cal-Am's requested increase. Once Cal-Am's requested increase is granted, the monthly water costs for the project will be less than Cal-Am's in many cases.

OCEAN VIEW PLAZA

Unit description	Monthly Water Costs
Inclusionary units—1 or 2 bedrooms, 1 bathroom	$39.59--$48.23
Market rate units—2 bedrooms, 2 bathrooms	$60.56--$73.77
Market rate units—3 bedrooms, 3.5 bathrooms	$87.91--$107.10

CAL-AM CUSTOMERS

Unit description	Monthly Water Costs[1]	Monthly Water Costs Following Applied for Increase[2]
Monterey residential 2009	$29.60	$52.60
Monterey residential 2010	$52.60	$59.03
Monterey residential 2011	$59.03	$66.44
Monterey Bishop (Pasadera) 2009	$62.51	$111.39
Monterey Bishop 2010	$111.39	$125.14
Monterey Bishop 2011	$125.14	$140.67
Monterey Hidden Hills 2009	$77.33	$139.05
Monterey Hidden Hills 2010	$139.05	$155.43
Monterey Hidden Hills 2011	$155.43	$174.81

3. Marine Resources: The Project Is Consistent with Coastal Act Sections 30230 and 30231.

A. The Project Is Consistent with Coastal Act Section 30230.

Coastal Act Section 30230:

> Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

B. The Project Is Consistent with Coastal Act Section 30231.

Coastal Act Section 30231:

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of

[1] Information from Public Notice published February 8, 2008 in the *Carmel Pine Cone* by California American Water.
[2] Following approval of Cal-Am's application to the CPUC for general rate case increase, 08-01-027.

> waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

C. There Will Be No Significant Adverse Impacts to Marine Resources as a Result of the Project.

The EIR for the project found no significant adverse impacts from the project. As originally designed, the desalination facility was to have an open ocean intake. With regard to the open ocean intake, the EIR found as follows:

> In general, potential impingement and entrainment impacts of the project were minimized by siting the intake structure as far as possible from kelp forests and rocky habitat areas. Potential Entrainment or passage of small fish or marine organisms into the intake pipe would be further reduced by installing a steel screen with a mesh size not to exceed 0.125 inches. Impingement impacts would be reduced by fitting the intake pipe with a "velocity cap" which would reduce maximum intake velocity to 0.2 feet per second (fps). This flow reduction should essentially eliminate any impingement impacts to marine mammals and large fish. While entrainment impacts are expected, which would result in the mortality of any marine organisms entrained into the desalination facility, this impact is considered less than significant in the context of the entire Monterey Bay ecosystem given the relatively small amount of seawater (maximum 100,000 gallons per day) entering the intake. By contrast, Duke Energy's Moss Landing Power Plant has an intake pipe with a capacity of 890 million gallons per day, which is 8,900 times the volume of the intake proposed for the project.

EIR, p. 248.

With regard to the discharge, the EIR similarly concluded there would be no adverse impacts:

> Even under a worst-case scenario of low current velocities and high levels of temperature and salinity stratification in the water column, the study found that the effluent would be reduced to 34 ppt (2 percent above ambient salinity) within a horizontal distance of 2.4 meters of the discharge diffuser. In other words, the salinity levels in the "mixing zone" would return to within about 2 percent (0.6 ppt) of ambient seawater concentrations within a distance of about eight feet of the discharge point. Under normal conditions, and under conditions of wave mixing (which was not considered in the dilution analysis), the salinity would be further reduced. Thus any increase in salinity at the discharge point would be minor and limited in aerial extent.

> ....Due to the relatively low levels of both discharge volume and salinity estimated for the proposed project, as well as the increased mixing rates achieved by using a multiport diffuser and elevating the diffuser above the ocean floor, impacts to the biological resources of Monterey Bay are expected to be less than significant.

EIR, pp. 248-9.

D. The EIR's Analysis of Marine Impacts Has Been Repeatedly Upheld as Valid.

The EIR for the project was completed by the City of Monterey in August 2001. In November 2002, the Save Our Waterfront Committee challenged the EIR in Monterey County Superior Court. The Monterey County Superior Court upheld the validity of the EIR's water supply discussion in its order dated September 18, 2003, stating as follows:

> Petitioners contend the EIR is deficient for failing to discuss growth-inducing or cumulative impacts. The thrust of the argument seems to be that approval of this system may be a precedent for future desalination projects, thereby creating more available water, which would inevitably mean more development.
>
> The Court finds this to be a tenuous argument. Any subsequent projects will be subject to environmental review. Presumably, those charged with approving those project proposals will evaluate the totality of circumstances that are then present. A logical extension of Petitioner's argument would call for a purposeful effort to keep water availability scarce as a basis for preventing development. The Court finds that the EIR adequately discussed the water supply issue.

When the Save Our Waterfront Committee again challenged the EIR in 2004, the Monterey County Superior Court again upheld the validity of the EIR. The Coastal Commission staff itself implicitly acknowledged the validity of the EIR when it sent a letter to LAFCO acknowledging that the EIR was final for the project and that Coastal Commission staff would *not* be performing any additional environmental review. See Coastal Commission staff letter to LAFCO, May 9, 2005, enclosed.

Coastal Commission staff's assertions that additional environmental review should be done is therefore contrary to the certified and Court approved EIR as well as to the Coastal Commission staff's own assertion to LAFCO that LAFCO should proceed with its evaluation of the CSD because no additional environmental review would be done. The Coastal Commission staff has not provided any evidence that contradicts the conclusions in the EIR that the project will not have any significant adverse impacts.

Any assertion by the Coastal Commission staff that the project will cause any significant adverse impacts is completely unsupported, especially since at the Coastal Commission staff's request, the project will now utilize a sub-surface intake which will eliminate entrainment and impingement.

E. The Project Is Allowed in the Ed Ricketts State Marine Conservation Area.

The operation of water intake is not a prohibited taking in the Ed Ricketts State Marine Conservation Area ("MCA"). The subsurface intake for the desalination facility has no entrainment issues as acknowledged by staff, and the emergency operation of an open ocean back up intake does not create a prohibited taking.

The impetus for the 1999 Marine Life Protection Act (MLPA) and implementation of the Marine Protection Areas was derived from a science-based concern of the commercial and recreational take of species and damage to marine ecosystems mostly through direct fishing or bycatch. The MLPA mandated the State design and manage an improved network of marine protected areas to, among other things, protect marine life and habitats, marine ecosystems, and marine natural heritage.

The Edward F. Ricketts State MCA was established by the State Fish and Game Commission and became effective on September 21, 2007. By regulation (14 CCR § 632 (b)(36)), the Edward F. Ricketts MCA has the following restrictions of recreation and commercial take:

1. The recreational take of finfish by hook-and-line is allowed.
2. The commercial take of giant kelp (Macrocystis pyrifera) and bull kelp (Nereocystis spp.) is allowed by hand in the area defined by subsection 165(c)(4)(D) under the following conditions:
   a. A kelp harvester with a valid license issued pursuant to Section 165 may take no more than 12 tons of kelp from the portion of Administrative Kelp Bed 220 within the Edward F. Ricketts State Marine Conservation Area in any calendar month.
   b. Duplicate landing records must be kept on board the harvest vessel in accordance with the requirements of Section 165.

Should the Department of Fish and Game require any further consultation or request a permit, we would comply with this request.

F. The Project Has NO Negative Impacts on the Carmel River Aquifer and the Seaside Aquifer.

The Coastal Commission staff's report oddly devotes numerous pages to the difficulties Cal-Am is experiencing in providing adequate water to its customers. This discussion is completely irrelevant to the project since the project will not be utilizing Cal-Am as a water provider. As noted in the project's environmental impact review ("EIR"), Cal-Am will not be providing backup water in the unprecedented event of a major desalination facility failure which could not

be remedied prior to the water in the storage tanks being emptied. As noted in the EIR, the storage tanks hold enough water for six days of regular use without conservation. With conservation measures, the water in the storage tanks could last two to four times as long. In the unlikely event of a major desalination facility failure which could not be remedied within 1-3 weeks, the water for the project could be provided by water trucks for the emergency's duration. Water trucks are a frequent source of emergency back up water where a water system is not connected to a larger system.

The Coastal Commission staff correctly points out that the project EIR rejected the use of a mobile water supply, but the staff fails to explain that this rejection was for using the mobile water supply as the primary water supply for the project. Since the entire project will only be using approximately 25,000 gallons per day without any conservation measures, one or two 10,000 gallon water trucks from outside Cal-Am's jurisdiction per day could sufficiently provide any water needed in the unlikely event of an emergency. The Coastal Commission staff's attempt to find the project inconsistent with the Coastal Act based upon the Coastal Commission staff's false assertion that Cal-Am will be providing water to the project is ridiculous.

G. The Project Is Consistent with Coastal Act Section 30233.

Coastal Act 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:
>
> **(1)** New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
>
> **(2)** Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
>
> **(3)** In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
>
> **(4)** 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.
>
> **(5)** Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(6) Restoration purposes.

(7) Nature study, aquaculture, or similar resource-dependent activities.

The Coastal Commission staff acknowledges that fill is allowed for specified uses "such as coastal dependent industry, or maintenance of existing pipelines incidental to an existing public service". Coastal Commission Staff Report, p. 25. Without any explanation, the Coastal Commission staff asserts that none of these specified uses apply to the project.

The Coastal Act defines a coastal dependent use as follows: "'Coastal-dependent development or use' means any development or use which requires a site on, or adjacent to, the sea to be able to function at all." Coastal Act Section 30101. In this case, in order to obtain water from the ocean, the desalination facility's pipelines must be in the ocean. The pipelines cannot go into any beach wells on the property because none exist on the property since it sits almost entirely on granite. The desalination facility must therefore be adjacent to the sea, and the desalination facility must be considered a "coastal-dependent development or use", so any fill or dredging for the project is allowed pursuant to Coastal Act Section 30233(a)(1).

Coastal Act Section 30233(a)(4) provides that fill or dredging is allowed for "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." In previous correspondence, staff has asserted that this section only applies to existing pipes, but given that the plain language of the statute states that "burying cables and pipes" is permissible, staff's interpretation that it only applies to pipes that are already buried is obviously wrong. Since the desalination facility will be a public water service provider, the plain language of Coastal Act Section 30233(a)(4) provides that it can bury/install the pipes and then it will be allowed to later maintain them. Accordingly, even if the project will include fill or dredging, the project will still comply with Coastal Act Section 30233.

4. Visual Resources.

The Coastal Commission staff report asserts that the project does not meet public view requirements, in large part because it does not meet certain public access policies from the Cannery Row LUP that actually apply to other parts of Cannery Row and that the Coastal Commission staff mistakenly applies to this project. See public access discussion at pages 2-5. When the correct policies are applied, it becomes obvious that the proposed project exceeds the requirement for public view with the creation of the bayside History Plaza. The views of the bay afforded by the proposed project will be the largest privately dedicated view corridor on Cannery Row. The view corridors substantially exceed dimensional guidelines for view sightlines in figure 18, View Sightlines for Shoreline Development. No part of above grade structures impinge on the view corridors, except for the proposed History Center which has been determined by the City of Monterey to make positive contributions to that view corridor.

The Coastal Commission staff's stated concern regarding "Community Character" fails to acknowledge the Conditions of Approval established by the City of Monterey, wherein regarding architectural treatment and conformity to stated LUP architectural objectives is assured by strict oversight by Architectural Review Committee and the Historic Preservation Commission for the City of Monterey.

5. Historic Resources: the Project Complies with the Coastal Act and the Cannery Row Land Use Plan.

The Coastal Commission staff asserts that the project does not include enough "clarity and detail for the Commission to conclude that these resources would be protected as directed by the Coastal Act and the Cannery Row LUP". Coastal Commission Staff Report, p. 50. It does not appear that the Coastal Commission staff reviewed the numerous conditions and mitigations imposed by the City of Monterey which are related to the protection of historic resources. For your convenience, we have attached them and highlighted for you the relevant sections. These numerous conditions and mitigations more than adequately ensure that the historic resources on the property will be protected.

6. Land Use/ Recreation and Visitor-Serving Uses

The Coastal Commission staff asserts that the project is not consistent with Coastal Act land use priority policies because staff does not consider the project components clear with regard to operations. It appears that staff is mostly concerned that the History Center will not remain a History Center. However, such concern is without foundation as the Conditions of Approval imposed by the City of Monterey specifically state that the History Center will remain a History Center until and unless the City's Planning Commission approves some other plan. (See Conditions of Approval, Condition No. 7.o.) The project complies with the Coastal Act with regard to land use/recreation and visitor-serving uses.

7. Water Quality.

As explained above, the EIR concludes that the project will not have any significant environmental impacts. The Coastal Commission staff concedes on page 55 of the Staff Report that the "collection of best management practices contained in the SWPPP would be adequate to protect water quality during construction." The Coastal Commission staff also concedes that best management practices post-construction and requirements to maintain runoff onsite would comply with the Coastal Act.

8. Environmentally Sensitive Habitat.

The Coastal Commission staff concedes that "No special status plant or animal species have been identified on the project site." Coastal Commission Staff Report, p. 58. As set forth above, the EIR concludes that the project will not have any significant adverse impacts. There is no

evidence that any additional environmental review is needed. The Coastal Commission staff's assertions that the project might cause harm is disproved by the EIR. The project complies with the Coastal Act and should be approved.

9. Parking and Traffic.

As noted in the Statement of Overriding Considerations, Cannery Row serves significant tourist destination traffic, and therefore traffic speeds are low and few accidents are experienced. Cannery Row is not a commuter thoroughfare, but rather a street that serves a high volume of pedestrian traffic. The street includes stop signs so cars must wait for pedestrians, instead of street lights which would force the pedestrians to wait for cars.

Traffic engineers indicate that it is not really appropriate to discuss how much additional time it will take to travel Cannery Row after the project is completed because Cannery Row is already very slow and it is not the City's intent to maximize speed on this high volume pedestrian destination. Nonetheless, we have summarized pages from the project's EIR which indicate the increase in delay attributable to the project. These increases are prior to the mitigations and the additional improvements that the City of Monterey will make with the additional $2 million that the project will be providing for improvements on Lighthouse Avenue.

From the EIR, it appears that the traffic on Cannery Row itself will not experience any critical delay as a result of the project. Other streets studied are summarized below.

Street	Peak Hour Weekday Increase in Critical Delay	Peak Hour Saturday Increase in Critical Delay
Lighthouse	63 seconds	25 seconds
Foam	13 seconds	5 seconds
Wave	NA	NA
Forest	1 second	7 seconds
Del Monte	94 seconds	126 seconds

10. Archaeological Resources.

The Coastal Commission staff concedes that the City's conditions with regard to archaeological resources are sufficient with the exception that the Coastal Commission staff states that it would add a condition "to ensure appropriate Native American consultations were included". Such a condition is acceptable.

11. The Project's Desalination Facility is a Coastal-Dependent Industrial Facility Which Meets All Requirements for Approval.

Since the desalination facility is clearly a coastal-dependent industrial facility like the Poseidon Resources project in Carlsbad (see Coastal Commission Staff Report dated February 21, 2008, page 91 *et seq.*), Coastal Act Section 30260 applies to it, and even if the Commission finds that the project does not comply with all of the other policies in the Coastal Act, the Commission may still approve the project:

> Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.

As explained above, there are no other locations for the desalination facility. The certified EIR which was repeatedly upheld by the Court concludes that there are no significant adverse impacts after mitigations. The public will benefit tremendously by the approval of the project, and the public will be adversely affected by the continued presence of the blighted eyesore. The public will benefit from the expansive coastal access, jobs, affordable housing and traffic improvements that this project provides. The public will be rid of a site subject to vandals, graffiti and debris.

Conclusion

The staff report and analysis omitted key information we have provided for this application and has incorrectly analyzed key aspects of this project as related to the Coastal Act and other guiding policies such and the Certified Cannery Row LUP.

The Ocean View Plaza project is a Cannery Row infill development project and was initiated with the City of Monterey in 1997. It is a project that has been in process for more than eleven years. The application for this project was originally submitted to the Coastal Commission on January 16, 2003. It was thereafter withdrawn, and it was then resubmitted on or about December 9, 2004. At its hearing on May 11, 2005, the Coastal Commission determined that the application could not proceed because the project needed a community services district to own and operate the desalination facility. After the formation of the Ocean View Community Services District, the application for the project was submitted on November 30, 2006. On August 10, 2007, Coastal Commission staff notified our office that the application was complete.

Several opportunities to schedule and hear this project came and went and we have diligently responded to additional requests for information even after the application was deemed complete. We appreciate the Commission staff workload, but the applicant has spent an enormous amount of time and money attempting to respond to all staff requests which has resulted in considerable delays. Moreover, we are confident in reviewing this additional information that you will conclude that there is no factual, scientific, or legal basis for any of the concerns stated in the staff report for opposing this project. We are hopeful that this information provided offers additional summary so that the staff report can accurately address keys issues associated with this project.

We look forward to continuing to work with staff so that this project will be heard at the July 2008 Commission meeting. We will follow up with scheduling a meeting to discuss this information so that we can address any questions or clarifications.

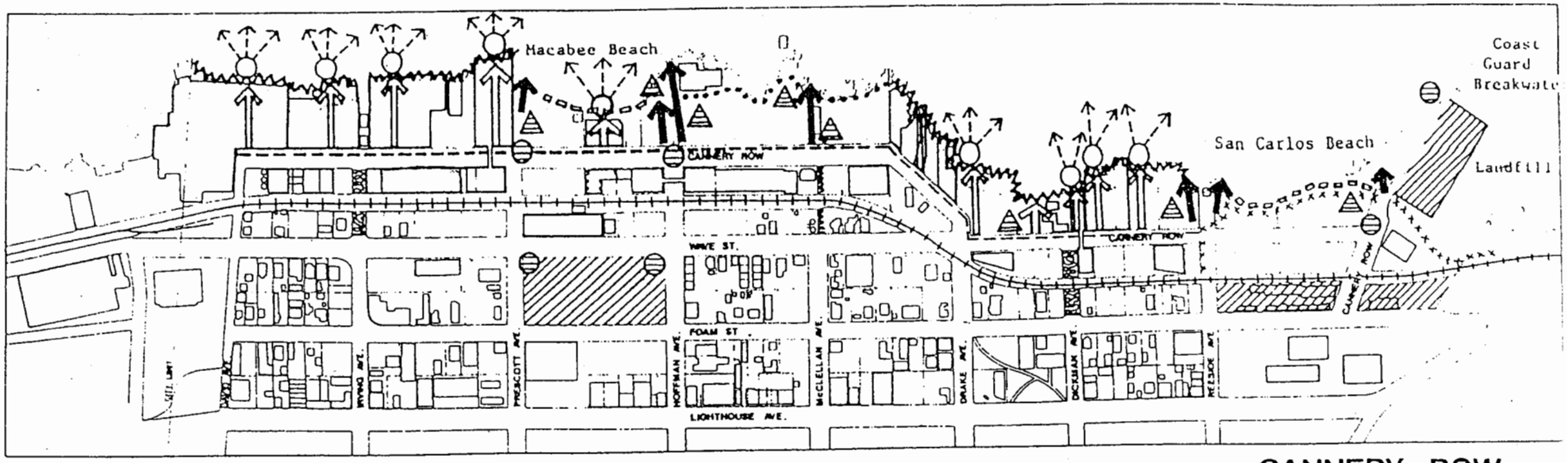
Sincerely,

Lombardo & Gilles, LLP

Anthony L. Lombardo
mcl

Anthony L. Lombardo

Enclosures



CANNERY ROW
LOCAL COASTAL PROGRAM
CITY OF MONTEREY

0 100 200 300 400 500
FEET

Figure 4
PUBLIC ACCESS

- VERTICAL ACCESS
- ACCESS (To Backs of Structures)
- LATERAL ACCESS (Sandy Beach)
- LATERAL ACCESS (Rocky Shoreline)
- VIEWPOINTS (Backs of Structures)
- LATERAL ACCESS (Cannery Row)
- LATERAL ACCESS (Backs of Structures)
- LATERAL ACCESS (Recreational Trail)
- LATERAL ACCESS (Recreational Trail Branch)
- PEDESTRIANWAY
- PEDESTRIAN PLAZA
- DIRECTIONAL SIGNING
- PUBLIC PARKING

Note: The locations of VERTICAL ACCESS, ACCESS (To Backs of Structures), LATERAL ACCESS, PEDESTRIANWAYS, and PEDESTRIAN PLAZAS shown above within properties should not be interpreted as precise locations. These locations are to serve as guidelines for the City's Architectural Review Committee in determing precise location and design features within each property when it reviews specific development projects.

Policy b.12 on page II-A-7 provides that a pedestrian plaza or vertical access point may be provided at Aneas Beach, but both are not required.

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(page 19 of 20 pages)

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
FRONT STREET, SUITE 300
TA CRUZ, CA 95060
NE: (831) 427-4863
FAX: (831) 427-4877

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LAFCO

MAY 12 2005

May 9, 2005

Kate McKenna
Executive Officer
Monterey County Local Agency Formation Commission
132 Gabilan Street, Suite 102
Salinas, California, 93901

Subject: **Ocean View Plaza**

Dear Ms. McKenna,

I am writing in response to a letter regarding the Ocean View Plaza project written to me by your former staff member, Kristina Berry (Attachment 1). As you know, the Ocean View Plaza project, as approved by the City of Monterey, relies on the approval and construction of a desalination plant to provide water for the development because no water is available from Cal-Am, the company that supplies most of the water to the Monterey Peninsula. Application materials submitted to us by the Law Firm of Lombardo and Gilles, the applicant's representative, state that the desalination plant will be owned and operated by a Community Services District (CSD) that is not presently in existence (see Attachment 2: page 1 of the application to Regional Water Quality Control Board, attached as supplemental information to the application). Review of proposals for the formation of new Community Services Districts is a function of LAFCO pursuant to Government Code Section 61100 et seq. Given that the availability of an adequate water supply is fundamental to the viability of the project, LAFCO's action on such a proposal is critical because if formation of a district is denied, the development cannot go forward until Cal-Am augments its water supplies.

Ms. Berry states in her letter, *" LAFCO as policy, generally does not take action on a proposal until all discretionary permits are secured for the proposal."* Has this "policy" been formally adopted by the LAFCO Commission? If so, we are concerned about this approach because in this case, the proposal to form a Community Services District for a vacant 3.5-acre site would seem to present significant policy and legal issues for LAFCO that also speak directly to our requirements under the Coastal Act to assure that adequate public services are available for new development in urban areas. For example, one policy issue would be the cumulative effect of creating "mini" Community Services Districts to allow development to continue when the established service providers are temporarily unable to serve new customers. This activity would seem to fragment public services rather than consolidate them, as well as impede rational planning for such services. The potential relationship between this new CSD and Cal-Am and the existing water service system is also unclear to us. For example, would Cal-Am be required to provide an emergency backup supply to this CSD? From what I have learned discussing this concept with other LAFCO Executive Officers, there are perhaps a small handful of Community Services Districts located within existing incorporated cities and likely none that serve a single site. Therefore, this proposal would also appear to be precedential. Legally, there is also some question about whether the applicant can form a Community Services District on this site.

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01118

Government Code Section 61100 et seq. clearly contemplates the existence of *inhabited* development as a prerequisite for the formation of a Community Services District (10% of registered voters are required to sign the petition to begin the formation process, etc.). The subject site is vacant. There are no registered voters to initiate the process. The law also provides for the formation of a Community Services District by the local government (Government Code Section 61106) and it is my understanding that the applicant has made such a request of the City of Monterey, who will consider the proposal in mid June. LAFCO, however, would still be required to approve such a request after city action, and a city wide election may need to be held. In short, there would appear to be significant uncertainty as to whether and when the proposed CSD could be formed. Without such a formation, we would be unable to evaluate our requirement concerning the adequacy of public services for the proposed project. For all of these practical, public policy, and legal reasons, LAFCO should act on this proposal before any additional time is spent on reviewing the numerous other issues associated with this project. As you stated in our recent telephone conversation, I appreciate your willingness to revisit this "policy" as it applies in this case and look forward to your response.

Finally, Ms. Berry was also concerned that LAFCO would need a Certified Environmental Document to proceed with the review. The Final EIR (certified August 2001) and Supplemental EIR (certified June 2004) for this project *are* the certified environmental documents for this project and are available for LAFCO review. The Coastal Commission is not a lead agency for the purpose of CEQA and will not be preparing separate CEQA documents for this project. Thus, the documents that concerned Ms. Berry have existed for some time and no "unnecessary expense or duplication of work efforts" will occur as feared.

Again, thank you for discussing this matter with me and also for offering to revisit the position outlined in Ms. Berry's letter. I understand you wish to discuss this item with your legal counsel and that I can expect a response soon.

Sincerely,

Diane Landry

Diane Landry
District Manager

CCC Exhibit 17
(page 21 of 60 pages)

Seawater Desalination by Reverse Osmosis – Technology Proposed for the OVP Desalination Project.

Application # 3-08-0133

By: Val S. Frenkel

These comments are presented in response to the Coastal Commission staff report dated February 21, 2008.

Summary

Desalination by the Sea Water Reverse Osmosis Technology Has Been Successfully and Reliably Utilized for More Than 40 Years. Numerous redundancies are built into the design which ensure that the residents and tenants of the Ocean View Plaza will have a continuous and steady water supply.

The Coastal Commission staff report's criticism of the reliability of the desalination plant has no technical or scientific basis, and the staff report contains no examples of any operating desalination plants that have failed. This staff report ignores the technical data that has been provided to the Commission staff substantiating that the system designed for the Ocean View Plaza project incorporates well accepted technology that is proven to be reliable and that is in use throughout the world.

Desalinization System.

Reverse Osmosis membrane technology was developed at UCLA and was first patented in 1962. In the early 1970's, desalination by Reverse Osmosis became the leading treatment process producing drinking water from salt or brackish water. This technology produces potable water in thousands of desalination facilities around the world. (See Figure 1, next page.)

Reverse Osmosis desalination became the dominant desalination technology due to the reliability and flexibility of the process, and the relative simplicity of the operation. The economics of the Sea Water Reverse Osmosis ("SWRO") desalination process is also favorable compared to the other desalination technologies.

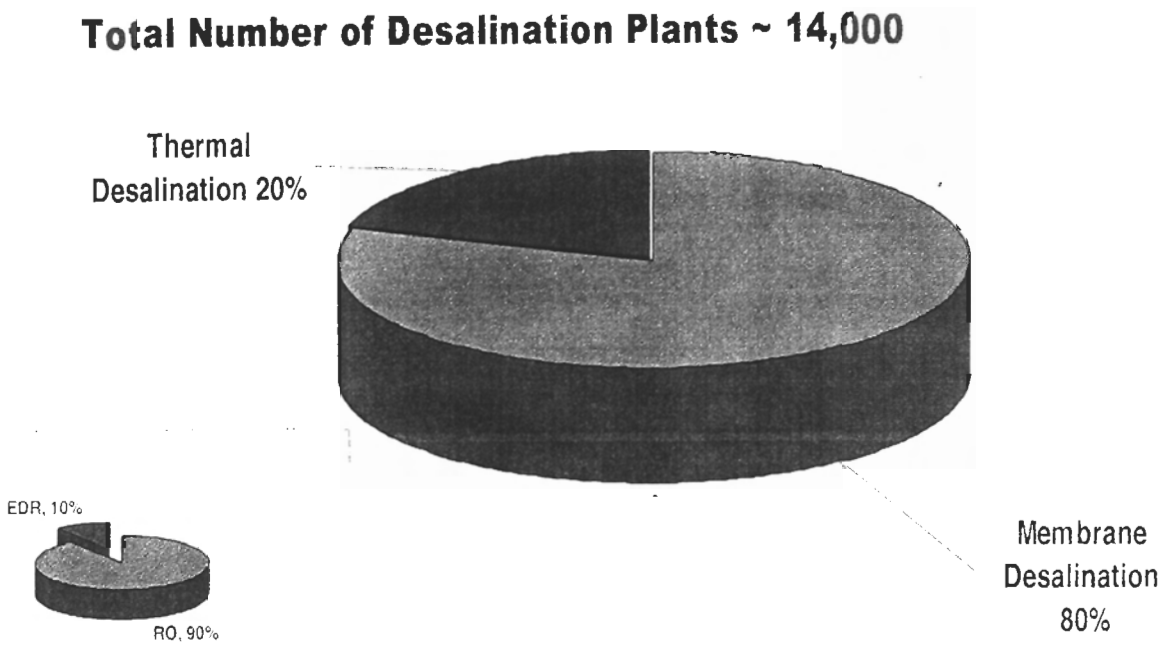


Figure 1: Number of desalination plants worldwide. RO - Reverse Osmosis, EDR - Electro Dialysis Reversal

As can be seen from the graphs above, most of the desalination plants around the world utilize Reverse Osmosis.

<u>Desalination Plants Such as the One Proposed for Ocean View Plaza Reliably Provide Water Around the Entire World.</u>

Locations in many countries such as Saudi Arabia, Israel, Egypt, Jordan, Spain, and Singapore have Sea Water Desalination as their sole source of potable water. These systems also supply potable water in Algeria, Antigua, Antilles, Bahamas, Barbados, Bermudas, Canada, Cayman Islands, Chile, China, Cuba, Denmark, Greece, India, Italy, Japan, Mexico, Philippines, Portugal, Taiwan, Great Britain, Venezuela and the Virgin Islands.

Many of the SWRO desalination facilities worldwide such as that designed for Ocean View Plaza have been successfully operating for many years. For example, in Israel, the desalination facility in spa City of Eilat on the Red Sea, with an initial capacity of 600,000 gallons per day, has been operating since 1979. Later in the 1990's, this plant capacity was increased up to 4,000,000

gallons per day. Also, in Egypt, a desalination facility in Sharm-El-Sheikh on Sinai (2,000,000 gallons per day) has been in operation since 1998. I designed both of these facilities.

The Design for the Ocean View Plaza Desalination Facility Is The Same Sea Water Reverse Osmosis Desalination Technology That Is Used World-wide for Desalination Facilities.

Since the early 1990's, I personally have designed and assisted with the construction of dozens of desalination plants around the globe, utilizing Reverse Osmosis. These plants have provided and will continue to provide a reliable water supply to their end users.

Although seawater desalination is relatively new to the State of California and to the California Coastal Commission, worldwide experience with desalination has occurred for more than four decades. Beyond the worldwide experience, pilot programs in California provide additional evidence that seawater desalination plants can be designed and constructed in California to provide a viable, reliable and safe source of potable water. The same experts that designed SWRO desalination plants around the world are now designing SWRO desalination plants in California based on the global experience and expertise collected by the desalination industry over the last four decades.

The Pilot Plant Constructed by Marin Municipal Water District Pilot Project Is Very Similar to the System Proposed for the Ocean View Plaza Desalination Facility.

Marin Municipal Water District (MMWD) recently completed a one year pilot seawater desalination program that utilized a number of pre-treatment technologies, including the one recommended for the Ocean View Plaza project. The pilot program confirmed that SWRO desalination is a reliable and a viable technology to desalinate seawater (see attached report), and therefore can provide an additional water supply source. The design for that pilot program was awarded National Honor Award for Excellence in Environmental Engineering (Applied Research), American Academy of Environmental Engineers.

This national award-winning design confirmed that the technology utilized in the Ocean View Plaza project provides optimal operational performance and reliability of operation. MMWD is considering the construction of a plant of between five and fifteen million gallons per day seawater desalination treatment facility.

The full report can be found on the MMWD website:
http://www.marinwater.org/controller?action=menuclick&id=413

The Pre-Treatment and RO System Are Well Matched to the Source Water.

The pre-treatment technology for the RO membranes is one of the most important and critical components in the entire desalination facility. During the pilot program in Marin, one of the best known pre-treatment technologies which is based on the low pressure membranes (UF – Ultrafiltration) was proven to be the best performing and economical technology as pre-treatment to the RO membranes, and it has been recommended for the future full scale SWRO facility in Marin. This technology performed very well in the San Francisco bay, a more onerous environment than the location for the Ocean View Plaza project. This is robust, best-performing technology that has been considered for many SWRO applications around the globe. Given the vastness of the Pacific Ocean and the rapid rate at which it dilutes other substances, as well as the historical data of the Pacific Ocean water collected during the operation of the Monterey Bay Aquarium SWRO over the last almost 20 years, it is very unlikely that the source water would experience any sudden changes of sufficient magnitude that they would prevent RO membranes from working, particularly the membranes that were designed into this project.

The Reverse Osmosis Plant Will Not Be Allowed To Provide Water To Any Customers Or Turned Over To The CSD Until It Is Proven A Safe and Reliable Water Supply.

The Monterey County Health Department (MCHD) has provided preliminary approval of the desal project based upon a 75% design submission. Prior to occupancy of the buildings, the desalination facility will be required to obtain an operating permit from the MCHD. The MCHD requires that the plant not only be built but also be operating and producing water which is proven safe and reliable before it is allowed to deliver water to customers. Only after the MCHD is satisfied will the operating permit be issued.

Desalination Facilities Are Designed With Numerous Redundancies And Have A Proven Track Record Of Operational Reliability.

Without evidence or explanation, the Coastal Commission staff report concludes that since the plant contains back up systems, this is "evidence" that we are expecting the desalination facility to have operational problems. Professionally, I cannot agree with this statement as I do not see any scientific, technological or practical basis that in any way supports it.

Facilities which satisfy the demand for basic human needs, such as drinking water and sewage treatment, are always designed for high duty cycles, reliability and incorporate redundancy in equipment and controls. This is not a unique feature of this or any other desalination plant. The most significant advantage of redundancy is that it allows continual maintenance activities to occur without

either disrupting service or waiting for catastrophic failure of components which is why water and sewer utilities are so reliable.

The staff's conclusion regarding redundancies is actually in conflict with generally accepted water and sewer treatment engineering principles which have been accepted worldwide for over fifty years.

Repairs.

In my many years of experience with dozens of desalination facilities, I have observed dozens of repair and maintenance activities for those plants. Repairs in desalination facilities such as those designed to be located in Building B are straightforward and do not require long down time. For example, cleaning the membranes usually takes four to eight hours once every approximately three to six months. In order to replace the membranes, which may need to be done after three years of operation, it takes two to four hours per membrane vessel. None of the desalination facilities I have worked on have needed to have a pump or energy device replaced, but it could theoretically happen. As an additional measure of security to maintain the reliability of the water source, the system is designed to have spare components on the shelf which can then be replaced in approximately eight hours.

When operated correctly according to the established operational and maintenance procedure, to the best of my knowledge, the desalination facilities I have worked on have never been off line for more than one day. The Ocean View Plaza project has back up water storage facilities to accommodate six days of regular water usage. With conservation measures, the storage facilities could provide several additional days of water. I designed this Ocean View Plaza facility with reliable technologies and with numerous redundancies to safeguard a reliable source of water for the end users.

Conclusion.

The desalination system designed for the Ocean View Plaza project on Cannery Row in Monterey Bay utilizes proven technology from the world's vast experience with successful and reliable desalination facilities. The safe and reliable water supply is designed for the residents, tenants and visitors of the Ocean View Plaza.

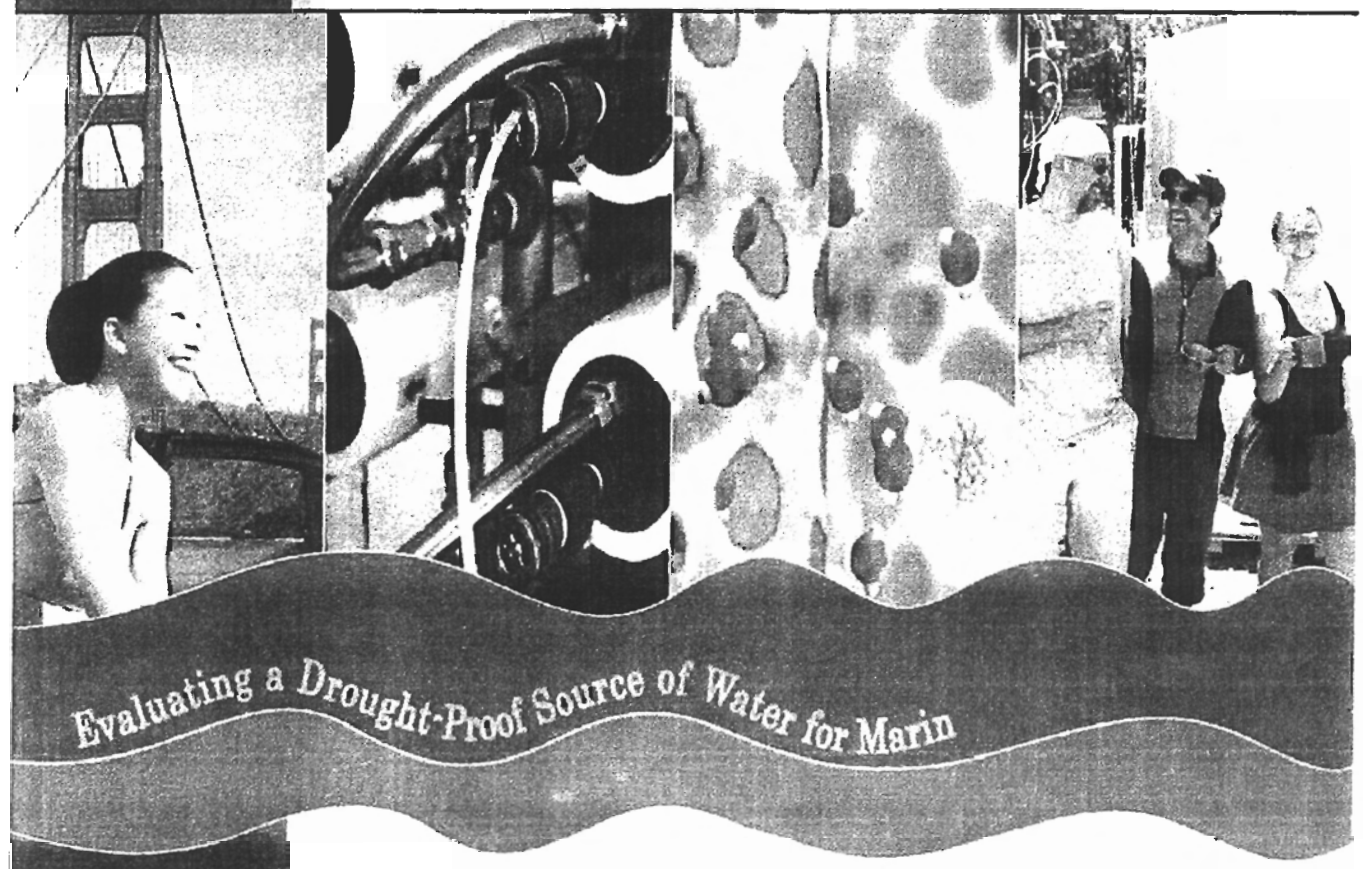
Val Frenkel, Ph.D., Director Membrane Technologies with Kennedy/Jenks Consultants, is the company-wide leader for Membrane Technologies. Dr. Frenkel formed and leads the firm's Membrane Technology Group of 17 and has 25 years of experience in engineering, with expertise in water and wastewater treatment, water reuse, and membrane technologies, including desalination in both municipal and industrial applications.

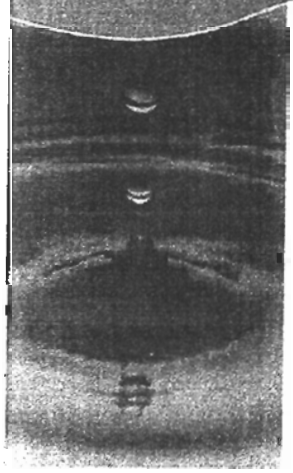
Dr. Frenkel has worked in consulting and equipment manufacturing practices and has a successful record of realizing project savings through technological alternatives. He has also taught at the university level, and published extensively both in the US and abroad, authoring several patents and more than 70 publications in the area of water and wastewater treatment.

Dr. Frenkel is a member of WEF, AWWA, AMTA, WateReuse, European Desalination Society, Ontario Society of Professional Engineers and Professional Engineers of Ontario, and also of various key committees at each. He has moderated technical sessions at National and International Conferences, and serves as a member of the Project Advisory Committee for the WaterReuse Foundation.

MARIN MUNICIPAL WATER DISTRICT

Engineering Report
Seawater Desalination Pilot Program





January 26, 2007

Kennedy/Jenks Consultants

Engineers & Scientists

CH2MHILL

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(page 28 of 60 pages)

Kennedy/Jenks Consultants
in association with CH2M HILL

622 Folsom Street
San Francisco, CA 94107
415-243-2150
415-896-0999 (Fax)

Engineering Report
MMWD Seawater Desalination Pilot Program

26 January 2007

Prepared for

Marin Municipal Water District
220 Nellen Avenue
Corte Madera, CA 94925

K/J Project No. 0468029

CCC Exhibit 17
(page 29 of 60 pages)

Executive Summary

Evaluating a Drought-Proof Water Source for Marin

> "But there were dry years too, and they put a terror on the (Salinas) valley. The water came in a thirty-year cycle...And it never failed that during the dry years, the people forgot about the wet years, and during the wet years they lost all memory of the dry years. It was always that way."
>
> - John Steinbeck, *East of Eden*

Marin Municipal Water District has not forgotten the hardships of the droughts of the mid-1970s or the early 1990s. To ensure a sufficient and reliable water supply in dry years, Marin Municipal Water District (MMWD) is evaluating broadening its water supply portfolio to include a seawater desalination plant to treat Northern San Francisco Bay (Bay) water. Pilot tests conducted in 1990 demonstrated that desalination could produce a drinking water that was both safe and palatable. Since that time treatment technologies have improved and there are new environmental and regulatory requirements that could impact permitting and operation of a full-scale desalination facility.

MMWD conducted a year-long Seawater Desalination Pilot Program to test more advanced treatment technologies and to update the previous desalination pilot work performed in 1990. This pilot program addressed treating the challenging Bay source water, tested new treatment technologies, and performed environmental studies to supplement the Environmental Impact Report (EIR) and to facilitate the application of permits for a full-scale facility. The outcome of this pilot program provides MMWD with the data necessary for a comprehensive evaluation of a full-scale desalination facility.

This report describes a few of the many environmental studies conducted to evaluate the proposed desalination project as part of the pilot program. However, this report is not intended to be a substitute for the EIR which will address all of the environmental issues involved with the proposed project. The EIR is scheduled for release in Spring 2007.

Summary of Pilot Study Results

The MMWD Seawater Desalination Pilot Program was a successful year-long desalination pilot study and public outreach program that met the program objectives. Based on the favorable outcome of the pilot program, seawater desalination can be a viable, reliable and drought-proof drinking water source for Marin.

The major pilot program objectives and findings are presented in Table ES.1. The Executive Summary provides a brief discussion of these findings. Additional technical discussion is provided in the body of the report and more detailed engineering data developed during the study is provided in the appendices.

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(page 30 of 60 pages)

Table ES.1: Pilot Program Objectives and Findings

MMWD Seawater Desalination Pilot Program Key Objectives	Pilot Program Findings
Demonstrate that the desalinated water meets state and federal drinking water standards. Demonstrate that the desalinated water meets MMWD's more stringent water quality goals and is compatible with MMWD current water sources.	*The desalinated water is safe.* *Over 650 regulated and voluntary constituents were tested. Results showed the desalinated water either meets or is better than all state and federal drinking water standards.* *Water quality and corrosion testing demonstrated the stability and compatibility of the desalination water with MMWD's other supplies.*
Conduct environmental studies to demonstrate that the desalination facility will not negatively impact the Bay environment and to support the EIR and permitting process for the full-scale facility.	*Desalination does not adversely impact the health of the Bay.* *The brine blended with existing wastewater effluent discharge from the Central Marin Sanitation Agency did not show significant effects during bioassay testing.* *Solids from the plant are not toxic and are acceptable to Redwood Landfill in Novato, CA*
Conduct a public outreach program to inform the public and media about desalination processes and the high quality of the desalinated water.	*MMWD customers became more familiar with desalination technology through tours, education seminars, media coverage, and presentations to community groups.* *MMWD customers who compared desalinated water with the existing supplies liked the taste of the desalinated water.*
Demonstrate advanced microfiltration and ultrafiltration (MF/UF) membrane treatment in parallel with conventional treatment to determine the best-suited pretreatment process for Bay water.	*The MF/UF pretreatment is the best suited pretreatment process for Bay water because it provides better water quality at lower cost.*
Develop design criteria and preliminary cost estimates for a full-scale desalination facility.	*Recommended design criteria and their associated costs are presented for full-scale 5 and 10 MGD capacity desalination facilities with various expansion options.*

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Finding #1: Desalinated Water is Safe

The Northern San Francisco Bay is a complex estuarine water body with influences from the Pacific Ocean, fresh water flow from the Sacramento Delta, local rivers, and Bay discharges. These influences affect water quality on a daily as well as a seasonal basis. Desalination treats this source water through pretreatment filtration, first-pass seawater reverse osmosis (SWRO) and, as an option, may include second-pass reverse osmosis (RO). Minerals are then added to match the composition of MMWD's current water sources.

To determine the safety of the desalinated water, the pilot program included a Sampling and Analysis Program (SAP). This program studied the characteristics of the Bay water (the source water) and the desalinated water. This process tracks the contaminants found in Bay water and evaluates their presence (or absence) in the desalinated water. The SAP also verified that:

- Desalinated water met state and federal drinking water regulatory requirements.
- Pilot plant processes were operating properly.

Because some compounds are known to be in the Bay water at very low levels, MMWD identified over 290 compounds that had high potential for low-level presence in Bay water and tested for these components in both source and desalinated water. These included:

- 209 types of polychlorinated biphenyls (PCBs).
- 44 types of flame retardants [polybrominated diphenyl ethers (PBDEs)].
- 40 pharmaceutical and personal care product compounds.

To detect these compounds, MMWD used analyses with minimum reporting limits (MRLs) that are 1,000 to 1,000,000 times lower than typically performed for regulatory compliance.

In total, the SAP analyzed a comprehensive list of 126 Regulated and 538 Voluntary (Non-Regulated) constituents over a 12-month period from March 2005 to March 2006.

The test program also included the E-Screen Assay, a unique test that uses a human breast cancer cell culture to screen for endocrine disrupting chemicals. Unlike traditional chemical testing that detects one chemical at a time, the E-Screen detects estrogenic activity regardless of what is causing that effect. It can also measure the effect of multiple estrogenic chemicals perhaps acting in combination or ones that are still unknown. These unique abilities make this new test a very important and powerful screening tool. The E-Screen Assay was used on both the source and desalinated water. The results of the E-Screen Assay testing were all non-detect.

Table ES.2 below presents the water quality results for regulated constituents that were detected in either the source or the desalinated water. The average water quality of MMWD's Reservoir and Sonoma County water supplies is provided for comparison. The results are also briefly described in the text that follows. For more in-depth information about the SAP and its results, see Sections 3, 4, and 5 and Appendix 1.

Table ES.2: Bay Source Water, Desalinated Water, and MMWD Drinking Water Quality

Drinking Water Quality Parameters			SF Bay Source Water[A]			Desalinated Water[A, B]			MMWD Reservoir			Sonoma County Water		
Analyte	Unit	Regulatory Limit	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average
Regulated Constituents														
Turbidity	NTU	5	2.7	300	15	0.05	0.1	0.07	0.05	0.24	0.08	0.06	0.28	0.11
Primary Drinking Water Regulated Constituents														
Inorganics with MCLs														
Arsenic	ppm	0.01	ND	0.024	0.004		ND			ND			ND	
Barium	ppm	2	ND	0.051	0.019		ND			ND			ND	
Beryllium	ppm	0.004	ND	0.0033	0.0005		ND			ND			ND	
Chromium	ppm	0.1	ND	0.042	0.0087		ND			ND			ND	
Mercury	ppm	0.002		ND		ND	0.0003[C]	ND		ND			ND	
Nickel	ppm	0.1	ND	0.057	0.022		ND			ND			ND	
Nitrate	ppm	44	ND	0.38	0.23		ND			ND		--	--	0.52
Nitrite	ppm	3.3	ND	0.017	0.013	ND	0.01[C]	ND		ND			ND	
Selenium	ppm	0.05	ND	0.091	0.01		ND			ND			ND	
Total Organic Carbon (TOC)	ppm	2	ND	6.98	1.41		ND		0.8	2.6	1.7	ND	1.4	0.8
Organics with MCLs		--												
Ethylene dibromide	ppm	0.00005	ND	0.00002[C]	0.00001		ND			ND			ND	
Radionuclides		--												
Gross Alpha	± 2.1 pCi/L	15	4.4	6.4	5.4		ND			2			1.6	
Gross Beta	± 33 pCi/L	50	144	236	190		ND			ND			ND	
Federal and State Monitoring Requirements		--												
CA UCMR		--												
Boron	ppm	1	1.5	3.3	2.3	0.1	0.4	0.2		ND		--	--	0.19
Manganese	ppm	0.05	ND	0.044	0.02		ND			ND			ND	
Secondary Drinking Water Regulated Constituents[D]														
Aluminum	ppm	0.05-0.2	ND	1.60	0.44		ND			ND			ND	
Chloride	ppm	250	3,100	15,000	11,000	15	34	20	10	37	21	7	10	8
Color (Apparent)	Pt/Co units	15	10	10	10		ND			ND			ND	
Copper	ppm	1.0	ND	0.01	0.003		ND			ND			ND	
Fluoride[E]	ppm	4	0.24	0.85	0.64		ND		0.7	1.1	0.8	0.7	1.1	0.8
Foaming Agents (MBAS)	ppm	0.5	0.10	0.44	0.29		ND			ND		ND	0.06	ND
Iron	ppm	0.3	0.18	0.75	0.34		ND			ND			ND	
Silver	ppm	0.1	ND	0.013	0.0029		ND			ND			ND	
Sulfate	ppm	500	440	2,100	1,500		ND		5	25	12	11	14	13
Solids, Dissolved	ppm	500	2,500	29,000	21,000	60	142	95	97	136	120	160	187	174
Zinc[E]	ppm	5	ND	0.010	0.004		ND		0.29	0.59	0.43	0.27	0.34	0.31

Abbreviations

MCL - Federal and State Maximum Contaminant Level. The level of a contaminant that is allowed in drinking water

ND - not detected

ppm (parts per million) = mg/L (milligrams of constituent per liter of water)

pCi/L - picocuries per liter

Pt/Co units - Color units

CA UCMR - California Unregulated Contaminant Monitoring Regulation

Notes

(A) SF Bay source water and RO permeate data from 19 sampling events between March 2005 and March 2006

(B) Desalinated water is composed of RO permeate water plus minerals added to match current MMWD drinking water quality

(C) One sample out of 8 had a result above the detection limit

(D) National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards

(E) Small amounts of this constituent are added to MMWD drinking water for health benefit

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SAP Results: Source Water Characterization

The SAP characterized the Bay source and found that over 95 percent of the analyses resulted in non-detect levels. The SAP also found that the Bay water contains ultra-low levels of non-regulated constituents. Most of the constituents that were detected in the source water were inorganic salts and minerals typical of the Pacific Ocean and the Bay, which the desalination process is specifically designed to remove.

SAP Results: Desalinated Water

Over 98 percent of the SAP analyses of the desalinated water resulted in non-detect levels. All detected constituents in the desalinated water were well below the regulatory limits.

The desalination process removed ultra-low level non-regulated constituents found in the source water. For these constituents, results of desalinated water testing were comparable to tests of the ultra-pure water blanks provided by analytical laboratories for quality control purposes.

Compatibility with MMWD's Existing Sources

Water quality and corrosion testing showed that the desalinated water is stable and compatible with MMWD's current water supplies. Section 7 of the report describes the corrosion testing in more detail.

Finding #2: Desalination Does Not Adversely Impact the Health of the Bay

Desalination plants have two separate byproducts. One is a salty, liquid stream (brine) comprised of filtered water and concentrated minerals from the Bay water. The brine discharge is approximately twice as salty as the Bay source water. The other byproduct is comprised of the solids removed from the source water by the pretreatment processes. The solids include silts and sediments from the Bay and the coagulant used in the pretreatment process. To ensure that a full-scale desalination plant would not adversely impact the Bay ecosystems, MMWD developed plans for the disposal of the brine and solids and conducted testing to address environmental and regulatory concerns during the pilot program.

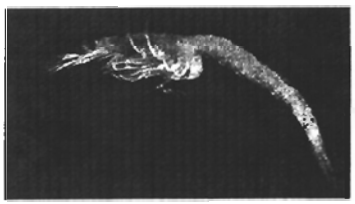
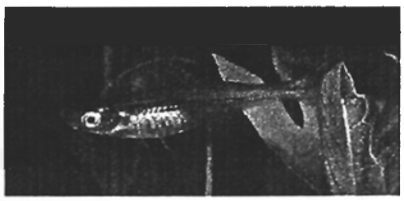
The plan calls for the brine produced by a full-scale MMWD desalination facility to be mixed with the relatively low-salt wastewater effluent that is discharged by the Central Marin Sanitation Agency (CMSA). The mixture of brine from the desalination plant and CMSA effluent would have a salinity level nearer to that of the Bay than the current CMSA effluent. The mixture would be discharged to the Bay through an existing deep-water outfall.

To ensure that the brine disposal process would meet the requirements of the San Francisco Bay Area Regional Water Quality Control Board (RWQCB), MMWD conducted acute and chronic bioassay testing with the pilot plant brine of the proposed desalination facility's whole effluent discharge. Whole effluent (WE) is defined as the blend of brine and CMSA effluent that would be discharged into the Bay. Acute bioassay tests expose sensitive marine

organisms to the WE for short periods of time to test for survivability, while chronic bioassay tests expose organisms to the WE for longer periods of time to identify possible reproductive and developmental impacts on the organisms.

Based on the expert opinion of biologists at the Romberg Tiburon Center for Environmental Studies, RWQCB staff, and staff from the consultant preparing the project EIR, the following aquatic species were selected for acute bioassay testing:

- Mysid shrimp (*Mysidopsis bahia)*
- Topsmelt (*Atherinops affinis*)
- Marine algae (*Thallasiosira pseudonanna*)

The following aquatic species were selected for the chronic bioassay testing:

- Marine Giant Kelp, (*Macrocystis pyrifera*), germination and growth test
- Bay Mussel, (*Mytilus edulis*), larval development and percent survival test
- Inland Silverside, (*Menidia beryllina*), survival and growth test
- Opossum Shrimp, (*Mysidopsis bahia*), survival and growth test
- Marine Diatom, (*Thalassiosira pseudonana*), growth test

The pilot plant produced a brine that is representative of the brine that would come from a full-scale desalination facility. This brine was used to conduct the required bioassay testing. The acute and chronic bioassay testing demonstrated that the blends of desalination brine and CMSA effluent discharged from a full-scale MMWD desalination facility should not adversely impact the Bay environment and the facility should meet NPDES permit requirements.

CMSA also conducted chronic bioassay testing of their current effluent concurrent with the pilot program WE testing. The results of pilot program WE testing were similar to the results of the current CMSA effluent testing, further showing that the addition of brine to CMSA effluent should not adversely impact the Bay environment. Section 7 of the report provides a more detailed discussion of the bioassay testing and the laboratory reports for the acute and chronic bioassay testing are included in Appendix 6.

Acute Bioassay Results

No significant effects on survival were observed among the acute bioassays conducted with shrimp, topsmelt or marine algae during any of the three episodes of testing. Consequently, no distinction in species sensitivity to the SWRO brine/CMSA discharge was detected.

Chronic Bioassay Results

The chronic bioassay testing provided the following results:

- Exposure to the WE blends did not cause statistically significant mortality to any of the five species tested.
- The WE blend did not elicit any statistically significant growth or developmental effects in three of the five species tested. Minor growth and development effects were observed on Giant Kelp and Bay Mussel. These observed effects are expected to be eliminated with minimal receiving-water dilution. The growth and development effects of the WE blend were similar to that of the current CMSA effluent without the addition of desalination brine.
- The results of the chronic bioassay testing using the WE blends were similar to the results of the chronic bioassay testing using the current CMSA effluent alone.

Solids Testing Results

For disposal of the pretreatment solids, the plan calls for sending the solids to the Redwood Landfill located in Novato, CA. This is typical of the disposal methods used for solids removed by other drinking water treatment and wastewater treatment plants in the region. The pilot program conducted testing on the pretreatment solids and demonstrated that they are not toxic and meet Redwood Landfill's acceptability requirements. Additional information and laboratory testing results are included in Appendix 1.

Finding #3: MMWD Customers Learned about Desalination and Liked the Water

The MMWD Seawater Desalination Pilot Program informed consumers about desalination technology and the high quality of water produced by membrane processes. The public outreach program included development of informational and educational materials and events including:

- Pilot plant layout and educational signs
- Desalination Explorer, an interactive computer animation that shows how all of the desalination and pretreatment processes work
- MMWD website content
- Media outreach
- Pilot plant grand opening
- 15 pilot plant tours and water tasting sessions
- Three public information seminars

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Desalination technology was explained using handouts, signs and an interactive computer program

The pilot plant tours and seminars provided excellent forums to inform and communicate with the public. During these events, desalinated water from the pilot plant and MMWD's local tap water were available for the public to taste and to compare. An overwhelming majority of the pilot plant visitors judged that the desalinated water tasted as good as, if not better than, the MMWD tap water.

Informing the Public about Energy Use

One of the public's significant concerns about desalination is energy use. In the March 8 public information seminar, Desalination: Understanding and Managing Energy Use, MMWD and the consultant team presented information on:

- Why MMWD is considering desalination
- An overview of desalination and energy use
- Advances in desalination energy efficiency

Marin Independent Journal

H_2O taste test

MMWD's desalinated bay water beats Marin competition

Tastings dispel desal's bad reputation

Pipeline project could soon die

MMWD's customers liked the taste of the desalinated water

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- Estimated energy use by an MMWD desalination facility
- Possible renewable energy sources for an MMWD desalination facility

All of the presentations from the three desalination seminars may be found on the MMWD website www.marinwater.org.

Energy Requirements for Desalination are Decreasing

The public presentations included important information regarding the significant reduction in energy requirements for seawater desalination facilities over the past few decades. These energy savings are primarily due to improvements in membrane technology and advances in energy recovery systems. A copy of the presentation is in Appendix 5 and on the MMWD website.

The energy required to desalinate water is a function of the temperature and salinity of the water. Higher salinity and colder water requires more energy to desalinate than lower salinity and warmer water. In the Bay, the highest salinity occurs in late summer and peaks in droughts when temperatures are the highest. The lowest temperatures occur in winter when salinity drops due to local precipitation and snowmelt from the Sierra.

Production from the proposed desalination plant would be low in wet and normal years and would be at the maximum during droughts. During average weather, a proposed desalination plant would operate only at partial capacity, with an average of 5 million gallons per day (MGD) and require 10 kilowatt-hours (kWhr) per 1000 gallons to desalinate water from the Bay and deliver it to customers. During droughts, the plant would operate at full capacity (up to 10 MGD) and require 14 kWhrs per 1000 gallons. Taking this energy use and spreading it among the 60,000 service connections in the MMWD service area, average operation would be equivalent to a compact fluorescent light bulb (34 watts) operating continuously in each service connection; and in droughts would be equivalent to a 100-watt light bulb operating continuously in each service connection.

MMWD plans to explore the use of alternative renewable energy sources to power the desalination facility. MMWD could purchase alternative energy from various suppliers including Pacific Gas and Electric. Alternative renewable energy sources could include:

- Solar energy
- Wind energy
- Wave/tidal energy
- Landfill gas energy

To help minimize the energy requirements for the MMWD Desalination facility, the plant design would incorporate high efficiency pumps and the most advanced energy recovery systems available. The desalination facility would also be designed with the flexibility to permit adjusting system operations to minimize energy use depending on the salinity and temperature of the Bay water.

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Finding #4: MF/UF is the Best Suited Pretreatment Process for Northern San Francisco Bay Water

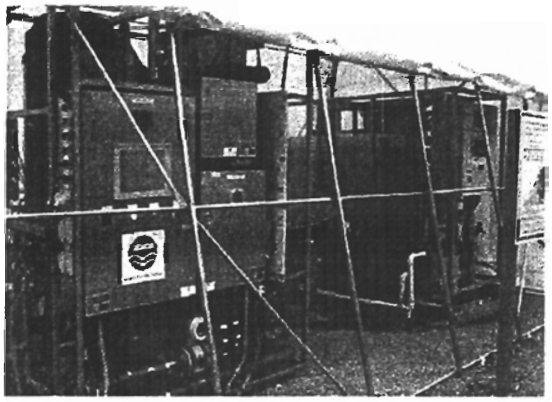
Bay water requires pretreatment prior to the seawater reverse osmosis (SWRO) process to remove particulate matter and other contaminants that could foul the spiral-wound, reverse-osmosis membranes. Two skid-mounted SWRO pilot units were used to compare the performance and efficiency of the two pretreatment systems in controlling SWRO membrane fouling. One SWRO pilot unit received feedwater filtered by the MF/UF pretreatment system (MF/UF SWRO), and the second SWRO pilot unit received feedwater filtered by the conventional pretreatment system (Conventional SWRO).

The MF/UF pretreatment system is best suited for the MMWD desalination facility because it provides:

- Better filtered water quality
- More consistent filtered water quality
- Less fouling of the SWRO units.

In addition, MF/UF pretreatment requires:

- Fewer process chemicals
- Smaller area
- Lower capital costs
- Lower operational costs.



State-of-the-art UF and MF pilot units

Sections 8 and 10 of the report provide a detailed evaluation of the performance and costs of the conventional and MF/UF pretreatment systems.

Finding #5: Various Implementation Options Balance Capital Expenditures and Flexibility

The recommended treatment processes for a full-scale MMWD seawater desalination facility are based on the performance of the pilot systems over the period of the MMWD pilot study as well as information from other published studies and operating seawater desalination systems. Our approach was to reliably meet water quality and production requirements and minimize the capital and operating costs of the facility.

Recommended Desalination Process and Project Plan

Figure ES.1 presents a simplified flow diagram of the recommended treatment processes for the MMWD desalination facility. The second-pass RO process is shown as an option to meet more stringent sodium, chloride and boron water quality criteria, if desired, during a drought. The second-pass RO is not required to meet state and federal water quality requirements.

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Figure ES.1: Desalination Facility Simplified Process Flow Schematic

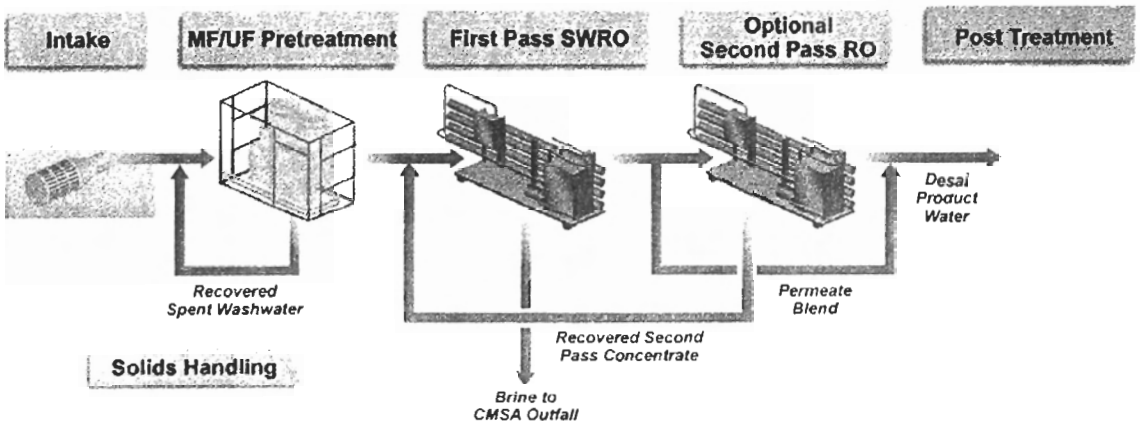

Figure ES.2 shows the overall project plan for the proposed desalination facility. The intake would be located at the end of a new concrete pier that is proposed to replace the existing Marin Rod and Gun Club pier. This approach minimizes new structures in the Bay and provides for access to the intake screens and equipment from the pier. A new pipeline would connect the pier intake facilities to the desalination facility site at MMWD's existing Pelican Way Storage Yard.

The brine from the desalination facility is proposed to be blended with effluent from the CMSA facility and returned to the Bay via CMSA's existing outfall. The spent washwater from the pretreatment systems would be captured, treated and recycled within the facility. Dewatered solids from the facility would be trucked to the Redwood Landfill. Desalinated drinking water produced by the facility would be delivered into the MMWD distribution system.

The treatment processes and ancillary support systems for a full-scale desalination facility as well as the operating parameters are described in more detail in Sections 8 and 9.

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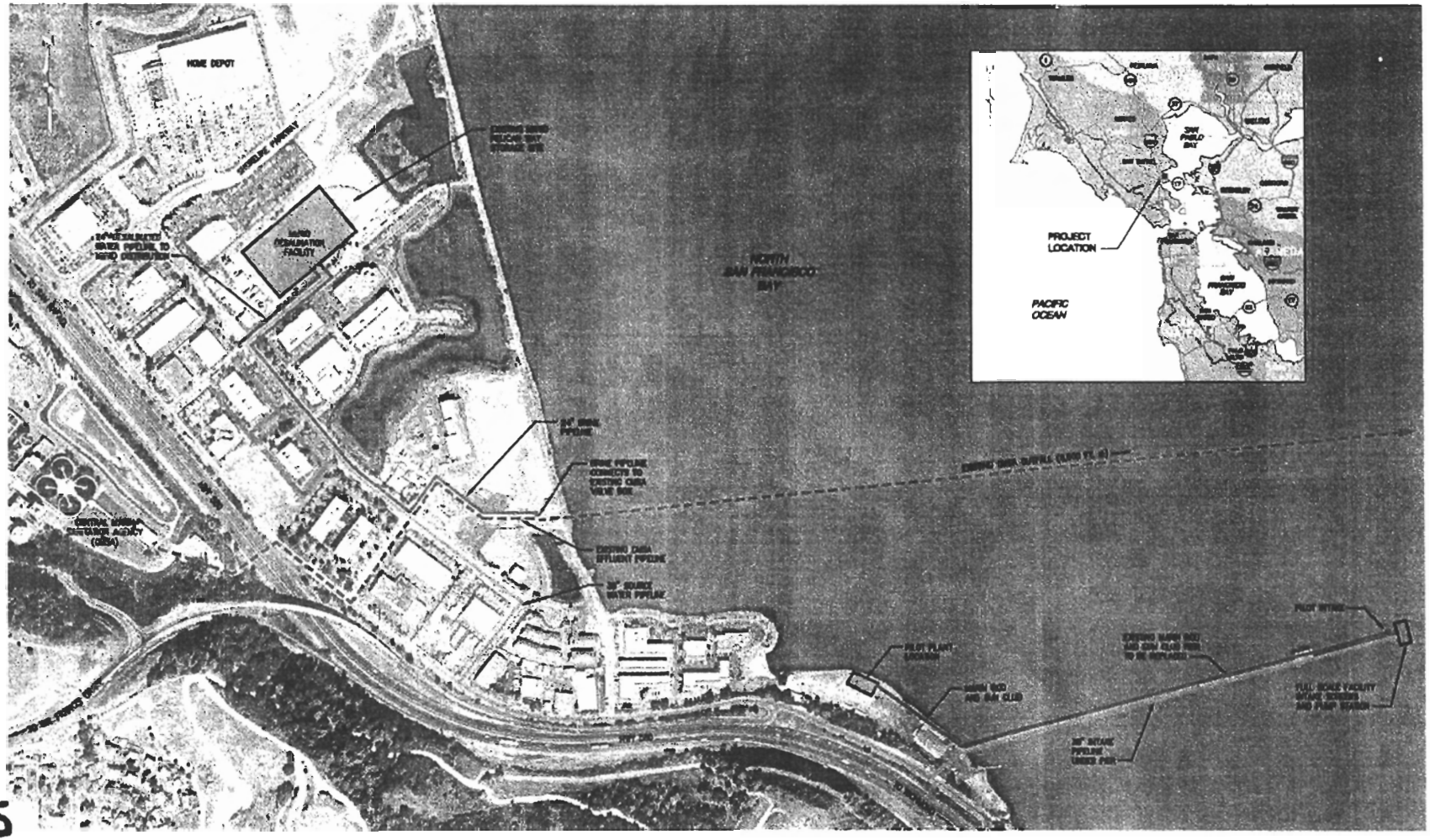
Figure ES.2: Overall Project Plan



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The MMWD Desalination Facility at the District's existing Pelican Way Storage Yard would include the following major buildings or process areas:

- Control and electrical building
- Pretreatment process area/basins
- First-pass SWRO building
- Post-treatment process area and finished water disinfection tanks
- Chemical Storage Area
- Solids residuals handling basins and dewatering building

Desalination Facility Capacity and Construction Alternatives

MMWD staff projected potential future system water demands through the year 2025 to estimate the amount of desalinated water that would be needed to meet those demands. The demand model projections incorporated use and supply factors based on normal rainfall years, low rainfall (dry) years and drought years. Based on these projections, in normal and dry years, the desalination plant would operate at lower production levels during the wet season (approximately December through April) and operate at increased production in the dry, summer season (approximately May through November). During droughts, the desalination plant would operate at full production levels all year or as required to meet water demands.

Based on MMWD staff projections, the potential operations scenarios for a full-scale desalination facility could be as follows:

- Initial operation:
  - In normal rainfall years: 4 MGD during the period May through November, 1 MGD during the period December through April.
  - In dry years: 10 MGD during the period April through Nov, 4 MGD during the period December through March.
  - In drought years: 10 MGD year-round.

- Approximately 10 years later:
  - In normal rainfall years: 8 MGD during the period May through November, 1 MGD during the period December through April.
  - In dry years: 12 MGD during the period April through November, 8 MGD during the period December through March.
  - In drought years: 15 MGD year round.

- Approximately Year 2025 and beyond:
  - In normal rainfall years: 12 MGD during the period May through November, 2 MGD during the period December through April.
  - In dry years: 15 MGD during the period April thru November, 12 MGD during the period December through March.
  - In drought years: 15 MGD year-round.

To meet some or all of the water demands described in the operations assumptions above, MMWD is considering several different approaches to designing and constructing a full-scale desalination facility. Cost estimates were developed for the initial construction phase of each of these approaches as described below:

Case A: A 5-MGD facility that is not designed for expansion.

Case B: A 5-MGD facility that is designed for typical expansion. This facility could be expanded to 10 or 15 MGD in later phases.

Case C: A 5-MGD facility that is designed for a rapid expansion to 10 MGD in a second phase. It could be expanded to 15 MGD using a typical approach in a third phase.

Case D: A10-MGD facility that is designed for typical expansion to 15 MGD.

In Cases A-C, the first phase results in construction of a 5-MGD facility, while in Case D, the first phase results in construction of a 10-MGD facility. The differences in the approach and features of the three facilities are presented in Table ES.3 below.

Table ES.3: Comparison of Construction Approaches

Comparison of Key Components	Case A: 5 MGD non-expandable	Case B: 5 MGD typical future expansion	Case C: 5 MGD rapid future expansion	Case D: 10 MGD typical future expansion
Site layout capacity	5 MGD	Allows for 15 MGD	Allows for 15 MGD	Allows for 15 MGD
Intake, raw water, and brine pipelines capacity	5 MGD	15 MGD	15 MGD	15 MGD
Buildings, tanks capacity	5 MGD	5 MGD	10 MGD	10 MGD
Piping stub-outs for future connections	None	Available	Available	Available
Installed process equipment capacity	5 MGD	5 MGD	5 MGD	10 MGD

Full-Scale Desalination Facility Cost Estimates

The capital and operating cost estimates for the MMWD Seawater Desalination Facility were developed using an in-depth parametric cost estimating model developed by CH2M HILL. A parametric model uses specific unit quantities and costs, derived from the quantities of materials required to construct similar facilities and current material costs. The model, called CPES (CH2M HILL's Parametric Cost Estimating System), includes individual cost modules for each water treatment unit operation. Operating and maintenance (O&M) cost estimates are calculated based on quantities and usage of chemicals, power and consumable equipment (e.g., membranes and cartridge filters) defined in each module in combination with user-defined input units for electrical, chemical, consumable and labor costs.

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CPES used specific design criteria defined through the pilot testing and unit costs for power, chemicals and labor representative of the Bay area. The cost model parameters were also evaluated and adjusted for MMWD project specific aspects.

Table ES.3 below presents a summary of standard cost estimating level descriptions, accuracy and recommended contingencies based on the level of the project. This data was complied from the Association for the Advancement of Cost Engineering (AACE).

Table ES.3: Standard AACE Cost Estimating Guidelines[(a)]

Cost Estimate Class[(a)]	Project Level Description	Estimate Accuracy Range	Recommended Estimate Contingency
Class 5	Planning	-30 to +50%	30 to 50%
Class 4	Conceptual (1 to 5% Design)	-15 to +30%	25 to 30%
Class 3	Preliminary (10 to 30% Design)	-10 to +20%	15 to 20%
Class 2	Detailed (40 to 70% Design)	-5 to +15%	10 to 15%
Class 1	Final (90 to 100% Design)	-5 to +10%	5 to 10%

Notes:
(a) Association for the Advancement of Cost Engineering, 1997. International Recommended Practices and Standards.

Although no design has been formally conducted in association with the development of the CPES cost estimates, preliminary design criteria have been developed through the conduct of the pilot study (as presented in Sections 8 and 9 of the report) and a basic understanding of site conditions and environmental issues has been developed through project specific studies. Consequently, a contingency of 25%, reflecting that used with a Class 4 estimate, has been applied to the cost estimates presented in this report.

The cost estimate tables also include a factor for escalation to the mid-point of construction, assumed to be approximately three years, based on approximately 5% cost inflation per year. This is based on the recent trend of the San Francisco Engineering News Record Construction Cost Index which has been higher than in years past due to more rapid increases seen in materials and construction costs since 2004.

In addition to the escalation to the mid-point of construction, Kennedy/Jenks-CH2M HILL recommend including a market uncertainty factor of 15%. This factor accounts for cost variation due to the recent tight construction market and reduced number of contractors bidding projects. This factor would be re-evaluated as the project moves closer to the bidding phase to account for the actual construction and bidding climate observed at the time.

Conceptual-level capital cost estimates are presented for the four capacity and implementation alternatives described above. Table ES.4 presents conceptual-level capital cost estimates for a full-scale MMWD Desalination Facility with MF/UF pretreatment as described in Sections 8 and 9 of the report. Section 10 of this report includes a comparison of

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the cost estimates of the conventional pretreatment SWRO facility with a MF/UF pretreatment SWRO facility and provides greater detail for the cost estimates of the SWRO facility components.

Table ES.4: Desalination Facility Conceptual Capital Cost Estimates

MMWD Desalination Facility				
Project Cost Component	**Case A: 5 MGD Not Expandable**	**Case B: 5 MGD "Typical" Expansion**	**Case C: 5 MGD "Rapid" Expansion**	**Case D: 10 MGD "Typical" Expansion**
Basic Facility and Intake Costs	**$47,275,000**	**$49,656,000**	**$62,570,000**	**$70,265,000**
Construction Markup @ 18% of Basic Cost	$8,511,000	$8,940,000	$11,265,000	$12,648,000
Contingency @ 25% of Basic Cost	$11,819,000	$12,414,000	$15,643,000	$17,567,000
Escalation to Mid-Point of Construction @ 15% of Basic Cost	$7,092,000	$7,449,000	$9,386,000	$10,540,000
Construction Market Uncertainty for SWRO Facility @ 15% of Basic Cost	$7,092,000	$7,449,000	$9,386,000	$10,540,000
Total Desalination Facility Construction Cost	**$81,789,000**	**$85,908,000**	**$108,250,000**	**$121,560,000**
Desalination Facility Cost per Gallon of Capacity, $	**$16**	**$17**	**$22**	**$12**
Non-Construction Costs @ 14% of Basic Cost (Permitting, Engineering, Construction Management)	$6,846,000	$7,156,000	$8,835,000	$9,836,000
MMWD Distribution System Improvements Cost	$22,600,000	$22,600,000	$42,000,000	$42,000,000
Total Project Cost w/ Distribution System Improvements	**$111,235,000**	**$115,664,000**	**$159,085,000**	**$173,396,000**

Case A, would provide a 5-MGD facility and the facility would not be designed with any features to facilitate future expansion. The Case B approach provides the lowest initial capital cost for the 5-MGD facility while still providing the ability to expand in the future. The cost estimate difference between Case A and Case B represents a relatively minor capital cost (3%).

The Case C approach would require a greater initial capital investment by MMWD compared to a typically expandable 5-MGD facility, but would provide the ability to rapidly expand from 5 MGD to 10 MGD in a period of approximately 12 months if increased desalinated water production is required in a drought. The typical expansion time could be approximately 24 to 36 months. The cost difference between the first phase of Case B and C is approximately 21%. The Case D approach provides 10 MGD of production capacity initially with the ability expand to 15 MGD. While this has a higher initial capital cost, the unit cost of the water for this approach is lowest.

Table ES.5 presents the conceptual operating and maintenance costs for a full-scale 5- and 10-MGD desalination facility presented for average and drought conditions as described in Section 10. This presents the typical range of annual operating costs for the MMWD desalination facility based on production and source water salinity variations.

Table ES.5: Desalination Facility Conceptual Operating Cost Estimates

MMWD MF/UF SWRO Desalination Facility				
O&M Cost Category	**5 MGD Average Conditions**	**5 MGD Drought Conditions**	**10 MGD Average Conditions**	**10 MGD Drought Conditions**
Chemicals	$628,000	$1,399,000	$1,140,000	$2,797,000
Power	$1,408,000	$3,289,000	$2,724,000	$7,042,000
Membrane Replacement	$215,000	$213,000	$424,000	$424,000
Solids Disposal	$27,000	$87,000	$45,000	$173,000
Maintenance	$795,000	$795,000	$1,228,000	$1,228,000
Labor	$1,650,000	$1,650,000	$1,065,000	$1,650,000
Total Annual O&M Cost	**$4,138,000**	**$6,848,000**	**$6,626,000**	**$12,729,000**

Under drought conditions the power use increases due to the increased salinity of the Bay source water and the increased plant production. The cost of chemicals and solids disposal also increase in a drought due to the increased plant production.

Table ES.6 presents the conceptual total water cost estimates (annualized capital and operating costs) for a proposed MMWD desalination facility with capacities and construction approaches as described above. The capital costs are converted into annual costs assuming financing over a 30-year period at an interest rate of 5 percent. The 30-year period is typical for financing SWRO facilities. To permit comparing the current project total water cost to total water costs in previous reports, the annual operations and maintenance costs are based on average Bay water salinity conditions and operations to produce 5,300 and 10,600 acre-feet (AF) of water per year as shown in the table.

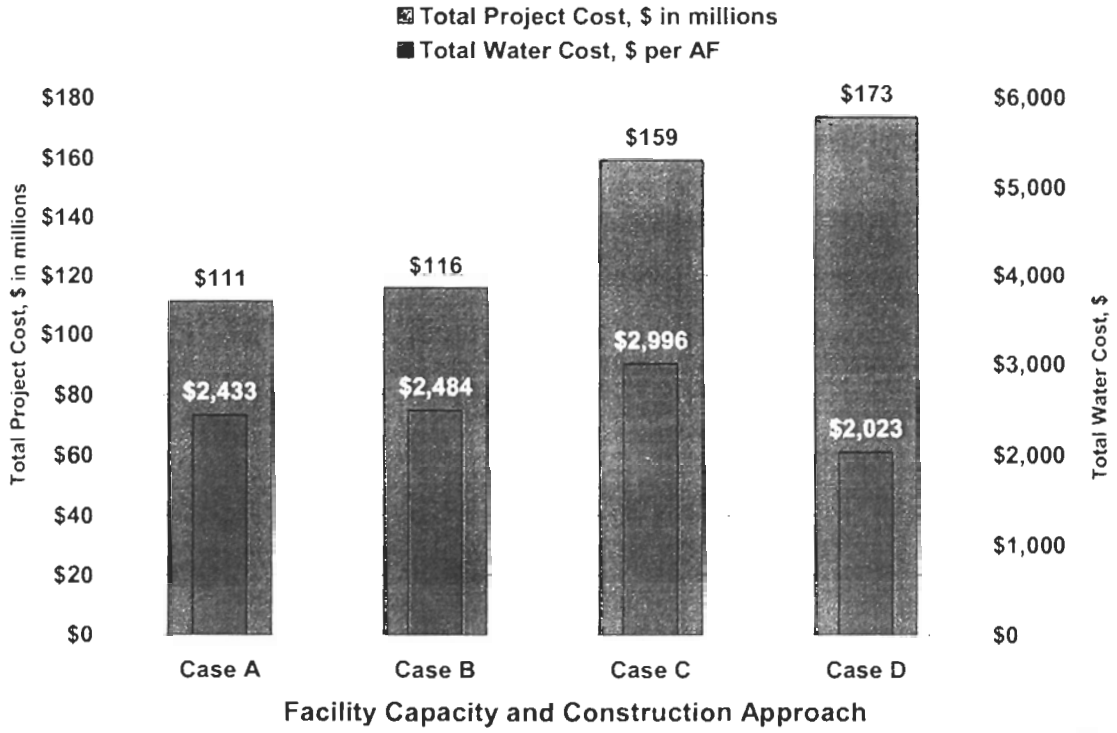
Table ES.6: Desalination Facility Total Water Cost Estimates

MMWD Desalination Facility Total Water Costs				
SWRO Facility Capacity	**Case A: 5 MGD Not Expandable**	**Case B: 5 MGD "Regular" Expansion**	**Case C: 5 MGD "Rapid" Expansion**	**Case D: 10 MGD "Regular" Expansion**
Annual Production in AF	5,300	5,300	5,300	10,600
Estimated Desalination Facility and Intake Capital Cost	$81,789,000	$85,908,000	$108,250,000	$121,560,000
Annualized Capital Cost	$5,324,464	$5,592,611	$7,047,075	$7,913,556
Annual Operating Cost	$6,100,000	$6,100,000	$6,100,000	$10,800,000
Total Desalination Facility Annual Costs	**$11,424,464**	**$11,692,611**	**$13,147,075**	**$18,713,556**

MMWD Desalination Facility Total Water Costs				
SWRO Facility Capacity	**Case A: 5 MGD Not Expandable**	**Case B: 5 MGD "Regular" Expansion**	**Case C: 5 MGD "Rapid" Expansion**	**Case D: 10 MGD "Regular" Expansion**
Desalination Facility Water Cost, $ per AF	**$2,156**	**$2,206**	**$2,481**	**$1,765**
Estimated Distribution System Improvements Capital Cost	$22,600,000	$22,600,000	$42,000,000	$42,000,000
Annualized Capital Cost	$1,471,260	$1,471,260	$2,734,200	$2,734,200
Total Project Annual Costs	**$12,895,724**	**$13,163,871**	**$15,881,275**	**$21,447,756**
Total Water Cost, $ per AF	**$2,433**	**$2,484**	**$2,996**	**$2,023**

While the Case D approach (initial 10 MGD of production capacity with the ability expand to 15 MGD) has a higher initial capital cost, the total unit cost of the water for this approach is lowest.

Figure ES.3: Desalination Project Estimated Capital and Total Water Cost



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Conclusion

The MMWD Seawater Desalination Pilot Program was a successful year-long desalination pilot study and public outreach program that met the program objectives. Based on the favorable outcome of the pilot program, seawater desalination can be a reliable drought-proof source of drinking water supply for Marin. The pilot program:

- Demonstrated that the desalinated water is safe and meets all state and federal requirements.
- Informed MMWD's customers about desalination and demonstrated that the water tastes good.
- Demonstrated that the brine discharge blended with CMSA effluent will not adversely impact the San Francisco Bay environment.
- Determined that MF/UF filtration is the best pretreatment process for North San Francisco Bay water.
- Developed preliminary design criteria and conceptual costs for a full scale desalination facility with capacities of 5 and 10 MGD, with varying expansion options.

MMWD has not forgotten the hardships of the droughts of the mid-1970s or the early 1990s. Desalination of San Francisco Bay water is a drought-proof, local, independent and effective approach to ensure a sufficient and reliable water supply for Marin through dry years and in the next drought.

Acknowledgements

We would like to acknowledge and thank the project team for their dedication and hard work on this successful project.

Marin Municipal Water District

Bob Castle, Water Quality Manager, Project Manager

Paul Sellier, Water Quality Engineer, Project Engineer

Larry Grabow, Laboratory Manager

Libby Pischel, Public Information Officer

Paul Helliker, General Manager

MMWD Operations and Maintenance Staff

Dave Furukawa, Separation Consultants, Inc., Sr. Technical Advisor

CCC Exhibit 17
(page 48 of 60 pages)

Central Marin Sanitation Agency

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100 YEARS

April 21, 2008

Peter Douglas, Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Susan Craig, Coastal Planner
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060-4508

Re: Cannery Row Marketplace LLC
Application for Coastal Development Permit
Former CDP Application No. 3-06-065
Current CDP Application No. 3-08-013

Dear Mr. Douglas and Ms. Craig:

I am a Senior Project Manager, Vice President and Western United States Manager for Parsons Brinckerhoff's Water Technical Resource Center. Parsons Brinckerhoff ("PB") is one of the world's leading planning, engineering,, and program and construction management companies with over 11,000 employees. Established more than 120 years ago, PB continues to help shape some of the world's largest and most important public works projects. PB offers engineering and advisory services for the full spectrum of water supply, flood control, hydraulic structures, hydroelectric facilities and wastewater management projects, including desalination facilities all over the world. PB staff has designed seawater subsurface intakes for facilities in Ensenada, Mexico, and Puerto Rico, and have been involved in the design and construction of dozens of desalination facilities around the world.

I personally have over 24 years of professional engineering experience, and am a licensed Civil Engineer in the State of California. I am the lead author of Parsons Brinckerhoff's June 2007 Technical Memorandum entitled "Evaluation of Alternatives to an Open Ocean Intake - Cannery Row Project, Monterey, California", included as part of the Coastal Development Permit Application for the Ocean View Plaza project, which was referred to in the California Coastal Commission's (CCC) February 21, 2008 Staff Report.

<u>Reverse Osmosis and Subsurface Intakes Are Proven to Be Reliable Technologies.</u>
I reviewed the CCC Staff Report and would like to clearly state to the Commissioners that I believe a subsurface sea water intake structure, as described in our June 2007 Technical Memorandum, is both a technically feasible and cost effective sea water intake alternative for the Ocean View Plaza project. Subsurface water intakes are a commonly employed technology, and are used to collect and reliably supply fresh, brackish and sea water to potable water treatment

plants around the world. Sub-surface intakes are either in use or planned to supply ocean water at several desalination facilities along the California coast, including Municipal Water District of Orange County's Dana Point facility. Subsurface intakes are constructed and function similar to groundwater supply wells, which are used to supply potable water to millions of Californians, including residents of Monterey County.

The proposed desalination technology (reverse osmosis) at the Cannery Row facility is a reliable and proven technology and is being reliably employed at hundreds, if not thousands, of water treatment facilities around the world. Reverse Osmosis or RO water treatment technology is a widely accepted water treatment technology by the civil engineering community at large, and by national organizations such as the American Water Works Association (AWWA) and the American Membrane Technology Association (AMTA). The AWWA is an international nonprofit and educational society and is the largest and oldest organization of water professionals in the world with more than 60,000 members including more than 4,600 utilities that supply water to roughly 180 million people in North America.

The Intake System for Ocean View Plaza Will Have Features That Make It Especially Reliable. The site conditions at the Cannery Row project will allow for an especially reliable final intake design. The multiple redundancies of the intake will ensure that there is a reliable feedwater supply to the treatment system, a point of concern of CCC staff. Our conceptual design calls for the use of flexible pipe material that can accommodate significant ground motion and shifting without failure. Flexible pipes such as those proposed are used on water supply projects worldwide because they have proven to be durable and reliable. In addition, a significant portion of the pipeline alignment will be bored through the underlying granite formation providing protection from ground motion events. Where the alignment will be submerged in sediment, concrete collars and the concrete vault will be designed to hold the pipes in place under the most extreme conditions to ensure sufficient sediment coverage. I cannot imagine any realistic scenarios where this system as proposed would have any "serious technical or operational problems lasting more than 3-6 days" or would require "the need to replace outfall or intake pipes" as described in the Staff Report.

The CCC Staff Report also concludes that the water supply could be unreliable if the intake pipes were to become fouled. The subsurface intake design will inhibit many sources of fouling. If the pipes do become fouled, there will be a gradual decline in their efficiency which will be measured through regular monitoring and remedied through routine maintenance. When necessary, the pipes can be cleaned by launching a "pig" or plug from the treatment plant end of the pipes to the intake system effectively cleaning out the pipes. Our conceptual design includes a chamber for

convenient pig retrieval. The nearby Monterey Bay Aquarium has an exhibit showing how their intake pipes are regularly "pigged". It should take only a few hours to complete a pigging cycle. In addition, our design includes two intake pipes, so while one is being "pigged", the other can remain in operation.

Corrections to the Staff Report

I would also like to correct several inaccuracies I found in the Staff Report. On page 19, second paragraph, of section II.C.1.4.a.2 - Offshore Components, the staff report states "that the proposed open ocean intake (a fourth pipe) would also be pulled through the bore, which would appear to necessitate a larger borehole than as currently proposed." This statement is incorrect. Our June 2007 Technical Memorandum previously provided to staff clearly states (page 2, 2nd paragraph) that our design for the sub-surface intake calls for two 6-inch-diameter intake pipes, which will be bundled with one 6-inch-diameter discharge pipe, for a total of three pipes in a single 20-inch conduit pipe; one 6-inch-diameter intake pipe will be able to meet the treatment system feedwater requirements, with the second pipe providing complete system redundancy and allowing for periodic maintenance of one pipe without interrupting the system operation. The open ocean intake was suggested as a back-up system, and if installed, it would be part of the sub-surface vault system and will not require an additional intake pipeline.

The Staff Report claims at the top of page 26 that the installation of the vault for the subsurface intake pipes would require dredging and that routine maintenance would also require dredging. Neither claim is true. As set forth in the Technical Memorandum, the vault will be assembled onshore. It will then be jetted into location. Dredging will not be required for the installation of the intake nor be required for routine maintenance.

The Staff Report also refers to the installation of a "4th" pipe in the 2nd paragraph of page 26, Section II.C.5.a.2.c.4 (?); this again, is incorrect (see above).

Furthermore, the Staff Report states (last sentence, page 19, Section II.C.1.4.a.2) that "the revised project description includes installation of a separate open ocean intake for situations where the subsurface intakes are rendered inoperable for a period exceeding the project's 3-6 day onsite storage capacity." While a back-up system (in this case, an open ocean intake) would add redundancy, it is unlikely that its use would be required due to the anticipated reliability of the subsurface intake vault system. In the unlikely event that the subsurface intake system became inoperable, I would expect that any necessary repairs could be completed within one or two days.

In closing, it is my opinion that the sub-surface intake system as presented in our Technical Memorandum for this project ensures a safe and reliable source of water for the water users. It is also my opinion that a seawater reverse osmosis treatment plant will add diversity and reliability to the water supply alternatives currently available to the Cannery Row area, and would be an overall health benefit to the community.

Sincerely,

Jeffrey Nelson

Jeffrey Nelson. P.E.
Senior Project Manager and Vice President
Parsons Brinckerhoff

padre
associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

April 21, 2008

Peter Douglas, Executive Director
California Coastal Commission
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Susan Craig, Coastal Planner
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060-4508

Re: Cannery Row Marketplace LLC Application for Coastal Development Permit CDP Application No. 3-08-013

Dear Mr. Douglas and Ms. Craig:

This letter has been prepared to respond to some of the issues that are discussed in the California Coastal Commission staff report on the Ocean View Plaza project and to provide clarification regarding what appear to be technical inaccuracies presented in that report.

I am a Senior Marine Scientist/Project Manager with Padre Associates, Inc. with over 35 years of experience in resource evaluations, impact assessment, and permitting for onshore, coastal and offshore developments. I specialize in project management, and data collection and analysis of multidisciplinary environmental assessment documents for federal, state, and local agencies as well as private property owners under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). I have extensive experience in marine surveys, environmental permitting for coastal and offshore projects, and marine resource assessments, and I have been responsible for managing environmental services for large and small consulting companies.

Since 1998, I have been involved in the marine environmental aspects of the Ocean View Plaza project and have worked closely with the engineers and with a number of the permitting agencies for the desalination facility.

Based on my review of the California Coastal Commission staff report, I offer the following information that is intended to correct or clarify apparent misstatements in the staff report:

1. ***Page 19, second paragraph, last line.*** The Coastal Commission staff indicates concern that the pipelines will become unburied because the minimum of 2 feet of sand cover estimated in the EIR may be insufficient. However, a 2004 coring/drilling study, which was previously provided to the Coastal Commission staff, indicates that considerably more sand cover was present within the pipeline corridor.

In December 2003, TEG completed a jet probe and drilling study within the "sand channel" to assess the subsurface conditions (TEG, 2004). The results of that survey indicated that at the time of sampling, sediment depth at the inshore station (water depth approximately 30 ft) was 7.5 ft. Sediment depths at the other six stations (water depth ranged from approximately 32 to 50 ft) were between 5.5 and 15+ ft. While sediment thicknesses vary with water depth and season, this depth of sediment appears to be sufficient to maintain the necessary cover over the pipelines.

Reference

TEG Oceanographic Services, 2004. Ocean View Plaza Desalination Plant, Offshore Drilling Program, Cannery Row, Monterey, CA. Final Report, January 2004.

2. ***Page 24, last paragraph.*** In this paragraph, the Coastal Commission staff states that if the subsurface intake system does not work, the project will be changed to use the open ocean intake. This is inconsistent with the terms of the Regional Water Quality Control Board (RWQCB) permit. Based on the Coastal Commission staff's letter to the RWQCB, a permit condition was added requiring a subsurface intake system. The permit states that the open ocean intake may be used only during an emergency if the subsurface intake fails and then only until such time as the subsurface system is repaired. The design of the "emergency open ocean intake" is identical to that which was proposed in the original project and which was assessed in the project EIR and upheld in Court as having no significant impacts to the marine resources.

3. ***Page 25, Dredging and Fill in Coastal Waters.*** Coastal Commission staff asserts that the pipelines and the vault structure are impermissible fill because they will not remain buried. As explained above, the 2004 report provided to the staff demonstrates that the pipelines and vault will remain buried.

4. ***Page 26, top paragraph, last sentence.*** This paragraph states that the applicant has not obtained other permits from other agencies. This is inconsistent with what I was told was the protocol between the Coastal Commission and these agencies. The Corps of Engineers has approved construction/installation of the open ocean intake and multi-port diffuser discharge pipeline system under Nationwide Permit (NWP) No. 17. However, the Corps requires Coastal Commission approval before issuance of their final permit.

   The Coastal Commission staff is fully aware that the Monterey Bay National Marine Sanctuary will not issue a permit prior to the Coastal Commission issuing a permit.

   The Commission staff also failed to tell the Commissioners that in August 2007, Ocean View Plaza and the Corps consulted with U.S. Fish & Wildlife Service (Service) and NOAA Fisheries (NOAA) re: the Corps 404/Section 10 permit. The Service has indicated that the pipeline construction will result in no significant impacts to listed species and NOAA has accepted the Essential Fish Habitat assessment as complete and likewise anticipates no significant impacts to managed species. In addition, a 401 Certification for the installation of the intakes and outfall pipelines has already been issued by the RWQCB to Corps for the originally-proposed project.

5. ***Page 26, Disruption of the Seafloor and Marine Habitat.*** As noted in item 1 above, the TEG report indicates sufficient sediment exists to cover the bundled pipelines (even if there was only 2 ft of sediment as the bundled pipelines are only 12 inches high maximum).

6. ***Page 57, three full paragraphs.*** The Coastal Commission staff states that no studies were conducted on the impacts of shading to the inter- and sub-tidal biological resources. The certified project EIR references three separate diver-biologist surveys that have been completed for the project. The referenced 1998 survey included observations within the pipeline corridor from -55 to -25 ft; a 2001 survey to collect sediment samples and biological observations from -75 to -35 ft; and a swim from the edge of the rock area -25 ft to -10 ft as part of the rock substrate survey was completed in 2004.

   While macrophytic algae (kelp, *etc.)* was observed on the rock substrates during all the surveys, no eelgrass or surfgrass was observed. My experience with eelgrass would strongly suggest it would not be present within the corridor due to the sediment type and oceanographic conditions. Moreover, with respect to the surfgrass which is present within the intertidal area, the Horizontal Directional Drilling (HDD) method of pipeline installation is specifically designed to eliminate impacts to the rocky substrate and biota that are present in the inshore portions of the corridor and "daylights" (exits the seafloor) at the offshore extent of the rock reef habitat. No shading study was previously required for this project, but I am familiar with the results of other local studies. Based on the existing conditions of this site which include a relatively high bluff that fronts the shoreline, the relatively low profile of the shade-producing structures, and the orientation of the structures, it is my professional opinion that shading effects to the inter- and sub-tidal algae would be minimal.

7. ***Page 59, second paragraph.*** The Coastal Commission staff's assertion that the desalination facility will degrade the parks and recreation value of this area appears unwarranted. The seafloor disturbance within the sedimentary habitat of the pipeline corridor will be temporary, and with jetting, the existing surficial sediments will remain. Alteration of the habitat and the associated impact to infauna and epibiota will be minimized by restricting the activities to within a specified area of sedimentary habitat. Anchoring of vessels *(e.g.,* during recreational diving or fishing) could potentially result in more significant and longer-term impacts than those resulting from the pipeline installation, particularly because those recreational activities usually occur within the kelp bed and rocky habitats. As designed, and except for the placement of the intake box (which has been required by regulatory agencies) no long term habitat alteration is expected and the monitoring program required by the RWQCB's NPDES permit will provide documentation of those effects. The EIR explains that the discharge and open ocean intake will have no significant impacts to the marine resources. The Coastal Commission has noted that subsurface intakes are recommended as they eliminate impingement and/or entrainment.

It is my professional opinion that the EIR is accurate and that as designed and mitigated, the project will not result in any significant, long term marine-related impacts.

Sincerely,

Ray deWit

Ray de Wit

HARO, KASUNICH AND ASSOCIATES, INC.

CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. M9579
30 April 2008

CANNERY ROW MARKETPLACE, LLC
c/o Kelly McCarthy Sutherland, Esq.
Lombardo & Gilles, LLP
318 Cayuga Street
Salinas, California 93901

Subject: Response to California Coastal Commission Concerns Regarding Long Term Sand Cover of Proposed Discharge and Intake Piping System for the Desalination Plant

Reference: Proposed Oceanview Plaza
457, 465, 470, 484, 565 and 570 Cannery Row
Monterey, California
CDP Application No. 3-08-013

Dear Ms. Sutherland:

You have asked us to comment on the California Coastal Commission's concerns that the proposed double pipe intake, intake chamber and outfall line will become exposed even though they are buried under sand levels which were recorded to be between 5.5 feet and 15+ feet deep. The double pipe intake design will be advanced through a horizontal directional bore hole penetrating the granite formations from the shoreline to a location about 350 feet from the Cannery Row site. This exit point will be in a water depth of about 25 feet. From the point where the pipes exit the granite, they will extend approximately 450 feet further offshore to the intake chamber (approximately 800 feet from the Cannery Row project site) which will be at a water depth of 40 feet. The discharge line will extend an additional 400 feet offshore to a water depth of 50 feet. All of the pipe systems will be jetted into the existing sand overburden starting at the HDD exit point and will be anchored in place by concrete weights attached to the pipes. The California Coastal Commission is apparently concerned that these pipes may become exposed where they are jetted underneath the present sand overburden at a point 350 feet offshore to the end of the project layouts during periods of high turbulence due to storm wave activity or significant littoral sand drift. To respond to this concern, we have reviewed the following documents germane to the proposed Oceanview Plaza project.

116 EAST LAKE AVENUE • WATSONVILLE, CALIFORNIA 95076 • (831) 722-4175 • FAX (831) 722-3202

1. Oceanview Plaza Desalination Plant Offshore Drilling Program, Cannery Row, Monterey California; Prepared by: TEG Oceanographic Services, January 2004

2. Technical Memorandum Evaluation of Alternatives to an Open Ocean Intake; Prepared by PB, dated June 2007

3. Wave Impacts on Oceanview Plaza, Monterey, California, Prepared by Edward B. Thornton, August 2003

4. A Letter Addressing Questions brought up by the Coastal Commission Staff regarding sea level rise and beach erosion relative to wave run-up and impacts on Oceanview Plaza, Prepared by, Edward B. Thornton, dated November 2007

We also utilized the Army Corp of Engineers Shore Protection Manuals Volumes 1 and 2, and the Wave Runup WRUP Computer Program for evaluating wave run-up and breaking wave depths and heights, the Handbook of Coastal Processes and Erosion by Paul D. Komar (1983) and the 31st edition, May 1998, bathymetric map for Monterey Bay prepared by NOAA to check the inshore and offshore profile of the proposed pipeline system presented by Parsons Brinckerhoff in their technical memorandum evaluating the open ocean intake improvements. Generally speaking, the offshore profile from Cannery Row at the proposed Ocean View Plaza location consists of an 8:1 slope gradient of exposed granite to a depth of approximately 25 feet at elevation -28 feet MSL where the slope flattens to a gradient of 30:1 and sand deposits exist seaward from that location.

Utilizing the wave regime presented in the wave run-up analysis by Dr. Thornton and the historic and analytical results of wave run-up at the referenced site, we determined maximum breaking waves at the project area that occur from the largest deep water waves that have been recorded at the Monterey Bay Buoy offshore from the subject property. These waves break on the near shore slope (8:1) at a distance ranging from 180 to 256 feet from the coastal bluff shoreline in water ranging from 12.4 to 22 feet deep respectively. Our analysis indicates the breaking wave height varies from 17 feet to 29 feet in this region of Monterey Bay. More locally, historical evidence indicates that 29 foot waves do not break along this section of Cannery Row nor do wave run-up elevations against buildings of 60 feet, MSL occur. Breaking wave heights of 17 feet are possible, with resultant wave run-up against buildings of 30 feet, MSL also being possible. Therefore, it is more likely that maximum breaking waves occur closer to the shore at 180 feet from the coastal bluff in depths of 12 feet of water rather than

the theoretical height and distance of 29 feet and 256 feet from shore, respectively.

The pipes exit the granite at approximately 350 feet from the shoreline where the sand layer is approximately 5 feet thick. Analytical results of the maximum breaking waves in the deepest water, farthest from the shoreline, conclude that this sand is not significantly disturbed by the breaking wave turbulence whose waves begin to break at least 100 feet closer to the shoreline.

We also have evaluated the closure depth in the segment of coastline where the facilities are located. The closure depth is the water depth which forms the boundary of where active sand movement caused by wave action takes place. Hallermeier (1981) and Birkemeier (1985) have analyzed closure depths and derived formulas for their estimation. At the open ocean intake with a 17 foot breaking wave, the closure depth estimate is 37 feet, which is seaward of the HDD exit point and landward of the intake box. Based on equilibrium profile concepts proposed by Bruun (1954) and elaborated on by Dean (1977), it is our opinion that in the area between the horizontally directional drilled exit point and the intake box, sediment deposition is more likely than erosion. Deposition of sediment in this zone would further bury the intake pipes rather than expose them.

In our opinion, portions of the sand deposits may also be historic remnant deposits which occurred when the shoreline was further seaward of its present location during the last 20,000 years. The sand deposit may also be a present sink for littoral zone sediment that flows down the steeper nearshore gradient of 8:1 where it is being deposited in small amounts at the flatter break in slope of 30:1.

Based on the results of our evaluation and our review of the proposed intake and discharge pipe system, its location from the shoreline and the deposition of sand relative to depth of water and maximum breaking wave conditions, we believe the proposed pipes, buried below a sand layer of 5 feet, from 350 feet from the shoreline seaward, are unlikely to be exposed even during strong wave conditions.

If you have any questions, please call our office.

Very truly yours,

HARO, KASUNICH AND ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
JOHN E. KASUNICH
No. 455
Exp. 6/08
GEOTECHNICAL
STATE OF CALIFORNIA

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G.E. 455

JEK/dk

Copies: 3 to Addressee