3.0 ENVIRONMENTAL EVALUATION

3.0 ENVIRONMENTAL EVALUATION

The following sections provide a comparison of impacts addressed within the Final Environmental Impact Report (EIR) for the Cambria Desalination Facility, dated December 8, 1994 with impacts associated with the proposed revisions as identified in Section 2.0, "Project Description," of this document. Seven areas in which the project is being modified are identified within the applicable sections. The seven areas are as follows: 1) Capacity Increase (1.008 MGD to 1.15 MGD), 2) Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson), 3) Bluff Caisson, 4) Drilling Operation Modification, 5) Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines), 6) Diffuser Port Modification, and 7) Ocean Intake Structure. The existing conditions information presented in the Final EIR are consistent with current conditions.

3.1 GEOLOGY, SOILS AND SEISMICITY

The following discussion is based on the Geology, Soils and Seismicity section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

No alterations to the Desalination Plant square footage beyond that addressed within the Final EIR will occur, therefore, no additional geologic impacts are anticipated. The increase in capacity from 1.008 mgd to 1.15 mgd is to facilitate the participation of SSCSD in the desalination project. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

As stated in the Final EIR, grading and excavation activities would be required for construction of the Desalination Plant and transmission facilities, thus resulting in the exposure of soils to short-term erosion by wind and water. An increase in the diameter of the brine pipeline by 4 inches (8-inch to 12-inch) will result in similar geologic impacts as discussed in Section 5.1, "Geology, Soils and Seismicity" of the Final EIR. The area designated for

trenching and excavation is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measure Nos. 1 through 4 would reduce short-term impacts to less than significant levels.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term impacts, as identified in the Final EIR. Although the proposed caisson will be excavated an additional 15 feet to a total depth below ground surface of approximately 80 feet, reducing the caisson diameter from 16 feet to 6 feet will result in a significant reduction in the amount of soil excavated from the caisson site as compared to the project identified in the Final EIR. The Final EIR provides mitigation requirements for erosion control in order to reduce short-term impacts to less than significant levels.

As stated in the Final EIR, the caisson will be setback approximately 75 feet from bluff edge as a buffer from potential sea cliff retreat, as required by the San Luis Obispo County Coastal Zone Land Use ordinance.

4. Drilling Operation Modification

The directional drilling operations will require a construction staging area slightly greater in size than that proposed as part of the microtunneling procedure. Drilling involves mobilizing a large trailer-mounted drill rig. The work area required would be approximately 150 feet by 100 feet square. The work area would contain the drill rig, drill steel and compressor and appurtenant facilities. The drill steel will enter the ground through an entry pit. This pit is approximately ten feet square and ten feet deep. The pit will be fitted with a liner to collect and retain the drilling spoils and fluid. As stated on page 4-18 of the Final EIR, staging areas would include parts of the bluff top property, portions of the County roadways and other CCSD properties/easements located in the vicinity. Although the technique for tunneling has been altered, there are no significant new or increased impacts and the required mitigation for construction remains applicable and appropriate, including mitigation measure Nos. 1 through 6 for erosion control, safety, bluff top stability and design pursuant to the Uniform Building Code requirements.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

As identified in the Final EIR, excavation would be required for construction of the transmission facilities, thus resulting in the exposure of soils to short-term erosion. Increasing the diameter of the annulus pipeline by six inches (24-inch to 30-inch) will result in similar geologic impacts as discussed in Section 5.1 of the Final EIR and no additional mitigation is required. At a distance of approximately 2,000 feet offshore, the drill string will curve upward and daylight through the sea floor sediments. As identified in the Final EIR, activities along the ocean floor would result in short-term construction impacts associated with the disturbance of sediment which causes an increase in suspended sediment in the water column. The Final EIR states that this impact is short-term and would cease with completion of construction activities. The directional drilling method, as with microtunneling, would avoid disturbing topsoil and sediments from the bluff caisson to approximately 2,000 feet offshore. For additional discussion refer to Section 3.4, "Marine Resources."

6. Diffuser Port Modification

As identified in Final EIR, excavation would be required for construction of the Desalination Plant and transmission facilities, thus resulting in the exposure of soils to short-term erosion. Increasing the number of diffusers with 11 additional ports will result in similar geologic impacts as discussed in Section 5.1 of the Final EIR. As identified in the Final EIR, activities along the ocean floor would result in short-term construction impacts associated with the disturbance of sediment which causes an increase in suspended sediment in the water column. The Final EIR states that this impact is short-term and would cease with completion of construction activities. For additional discussion refer to Section 3.4, "Marine Resources."

7. Ocean Intake Structure

The construction of a concrete base associated with the intake structure at the terminus of the annulus pipeline will be approximately eight feet by eight feet by six feet. The intake structure will rise approximately six to eight feet above the sea floor. The construction of a cement junction at the terminus of the previously proposed microtunneling daylight location would not be required; therefore, sediment disturbances associated with these activities would be avoided. It should be noted that the intake structure will require a total excavated volume of approximately 230 cubic yards of sandy ocean floor material. Disturbances to the ocean floor soils will impact an area similar to the area discussed in Section 5.4 of the Final EIR. For additional discussion refer to Section 3.4, "Marine Resources."

As stated on page 5.4-16 of the Final EIR, a cement junction box which required the replacement of approximately 225 feet^2 of soft bottom habitat with a cement structure that has vertical relief would be installed. Page 5.4-34 of the Final EIR concludes that the impacts to hard bottom habitat is not considered significant after mitigation. The modified intake structure is to be located in close proximity to the previously considered cement junction box. The analysis and determination in the Final EIR is consistent with the amended project description. The 230 cubic yards of excavated material will be placed on a material barge for shipping to an onshore location. Disposal of excavated materials shall be in accordance with regulatory requirements.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Sections 5.1 and 5.4 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.2 HYDROLOGY, DRAINAGE AND GROUNDWATER

The following discussion is based on the Hydrology, Drainage and Groundwater Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

No alterations to the desalination plant square footage beyond that addressed within the Final EIR will occur, therefore, no additional drainage impacts are anticipated. The increase in capacity from 1.008 mgd to 1.15 mgd is to facilitate the participation of SSCSD in the desalination project. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

The brine pipeline between the Desalination Plant and the bluff top caisson will be upsized from an 8-inch diameter pipe to a 12-inch diameter pipe. The pipeline will be located within the right-of-way of San Simeon Creek Road and will not require any additional area for installation; therefore, hydrology, drainage and groundwater impacts are similar to those identified in the Final EIR.

As identified in the Final EIR, a segment of the pipelines which cross Van Gordon Creek is within a Flood Hazard designation, and overall construction activities could increase sedimentation loads into Van Gordon and San Simeon Creek. Proper design and placement of the transmission facilities within the right-of-way of San Simeon Creek Road, will reduce potential impacts to less than significant levels. In addition, with implementation of erosion control measures as identified in the Final EIR, the potential sedimentation load would be reduced to less than significant levels.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term drainage impacts as identified in the Final EIR. The Final EIR

provides mitigation requirements for erosion control in order to reduce short-term construction impacts to less than significant levels.

4. Drilling Operation Modification

The directional drilling operation will require a construction staging area slightly greater in size as compared to the area discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging areas would include parts of the bluff top property, portions of the County roadways and other CCSD properties/easements located in the vicinity. Although the technique for performing tunneling activities has changed, the required mitigation for construction remains applicable, including mitigation measures Nos. 7 through 9 which are required to reduce drainage impacts to less than significant levels.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no affect on hydrology, drainage and groundwater.

6. Diffuser Port Modification

The proposed diffuser port modification will have no affect on hydrology, drainage and groundwater.

7. Ocean Intake Structure

The proposed modification to the Ocean Intake Structure will have no affect on hydrology, drainage and groundwater.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.2 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.3 TERRESTRIAL BIOLOGICAL RESOURCES

The following discussion is based on the Terrestrial Biological Resources section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

The increase in capacity from 1.008 mgd to 1.15 mgd to facilitate the participation of SSCSD in the desalination project will not result in additional impacts to Terrestrial Biological Resources than those identified in the Final EIR. No alterations to the Desalination Plant square footage beyond that addressed within the Final EIR will occur. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

The Final EIR provides a detailed records check and site reconnaissance for the onshore transmission facility alignment. The brine disposal upsizing will not result in additional impacts beyond those identified in Section 5.3, Terrestrial Biological Resources. The area designated for trenching and excavation is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measures numbers 13 through 16 for minimizing the affect areas, soil removal and replacement, grading adjacent to riparian areas and revegetation requirements for the compact cobwebby thistle (if necessary) would reduce short-term impacts to less than significant.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term impacts as identified in the Final EIR. The caisson location has been identified to contain limited biological habitat and construction will not create an impact on the diversity of natural species. As stated in the Final EIR, construction of the caisson structure is subject to mitigation measures nos. 13 through 16.

4. Drilling Operation Modification

The direction drilling technology exhibits similarities to the microtunneling construction process identified in the Final EIR. Operations will require a construction staging area as discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging areas would include parts of the bluff top property, portions of the County roadway and other CCSD properties/easements located in the vicinity. As stated on page 5.3-16 of the Final EIR, construction area which will be affected is limited and will not result in significant impacts to area vegetation. Construction would occur in a short duration and is not anticipated to impact wildlife species. A species of potential concern is the compact cobwebby thistle and disturbance to this species if subject to the requirements stated in mitigation measure #16 which identifies reestablishment criteria for any such disturbance.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no affect on Terrestrial Biological Resources.

6. Diffuser Port Modification

The proposed diffuser port modification will have no affect on Terrestrial Biological Resources.

7. Ocean Intake Structure

The proposed modification to the Ocean Intake Structure will have no affect on Terrestrial Biological Resources.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletion/modifications to the mitigation measures listed in Section 5.3 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.4 MARINE RESOURCES

The following discussion is based on the Marine Resources section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document. The following discussion is based on the Marine Resources Section of the Final Environmental Impact Report, the revised project description (Section 2 of this document), and oceanographic, geophysical, and marine biological information collected subsequent to the preparation of the Final Environmental Impact Report.

STANDARDS OF SIGNIFICANCE

As stated in the certified Final EIR, levels of significance for potential environmental impacts to marine resources are: Class I, Significant adverse environmental impacts than cannot be mitigated to an insignificant level; Class II: Significant adverse impacts that can be mitigated to an insignificant level; Class III: Insignificant adverse environmental impacts; and Class IV, Beneficial impacts.

An impact is considered significant if:

- It causes a measurable change in species composition or abundance of a community or it causes more than a 10 % loss of a natural habitat within the local project area for a period of five years or longer.

- It interferes substantially with the movement of a resident or migratory fish or wildlife species;

- It degrades the habitat of, or the results in a substantial loss of a sportsfish or commercial fishing resource;

- It conflicts with the policies of the State of California Ocean Plan

- It degrades the habitat or affects the population of a listed or candidate species. Significant impacts would include those that would directly affect the population, the breeding, or the foraging habitat of a State or Federally-listed proposed, or candidate species (C1,C2); or

- It causes the loss or degradation of any sensitive habitats.

The amount of sand bottom habitat in the project construction area is defined as the area within the 25 ft and 30 ft (MLLW) depth contours in the sand channel offshore of San Simeon Creek. This encompasses an area of approximately 13.8 acres (600,000 ft^2).

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

The increase in capacity from 1.008 mgd to 1.15 mgd to facilitate the participation of the SSCSD in the desalination project will result in a small incremental increase in the volume of plankton and fish larvae entrained into the open water intake. This will result in a Class III, less than significant environmental effect to the plankton community or to the fish populations in the local waters. Additional discussion of the effects of the seawater intake and the brine discharge are discussed below and in Appendix 8 (Water and Engineering Modeling 1995). If the SSCD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Marine habitats and communities will not be affected by this component of the project.

3. Bluff Caisson Modification

Marine habitats and communities will not be affected by this component of the project.

4. Drilling Operation Modification

Directional drilling (HDD) methods will be used to bore a tunnel under the sea floor between the onshore bluff caisson and the offshore intake and discharge facilities. The tunnel will house a 30 inch casing pipe that will contain two 10 inch feedwater pipelines and the single 10 inch brine reject water pipeline. During the drilling process, the drill head will be lubricated with a dense, biodegradable non-toxic polymer drilling fluid (IDP-135) produced by Baroid Drilling Fluids, Inc. (or equivalent). Product safety and transportation information of IDP-135 is presented in the Appendices of this report.

The HDD process will impact the project area sea floor when the drilling head emerges at the point where the intake and discharge junction structure will be located. This will be at an approximate depth of 26 feet MLLW. Sea floor sediments will be disturbed from the effects of drilling disturbance and the introduction of the non-toxic drilling fluid into the surrounding sediments. Disturbances associated with the actual construction of the intake and discharge junction structure are discussed in Section 3.4.7.

The HDD process will result in the mortality of some sessile or slow-moving sand bottom invertebrates in a 6 to 12 ft^2 area around the hole. No fish mortality will occur. Approximately 1 barrel of the non-toxic and biodegradable drilling mud will initially be mixed into the sediments impacting about 80 ft^2 of sand bottom habitat around the drilling hole (Ken Gluck, Oceaneering Technologies, Inc, pers comm). Some of the drilling fluid will be dispersed into the water column as a result of local bottom currents, wave turbulence, and other mixing processes. However, all of the sediments in the vicinity of the hole will be immediately excavated (including sediments mixed with the drilling fluid) and will then be transported to an onshore disposal area. Therefore, an insignificant amount of drilling fluid will likely remain in the marine sediments or in the water column in the vicinity of the junction box and intake structure.

The HDD process is expected to have a Class III, less than significant biological impacts on sand bottom habitat and associated fauna. Kelp bed resources, hard bottom reefs, or other sensitive habitats and species will not be impacted by the proposed drilling process.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

Marine habitats and communities will not be affected by this component of the project.

6. Diffuser Port Modification

Brine Effluent Pipe Construction. Proposed-and-updated offshore construction methods for the diffuser pipe are similar to the methods described in the Cambria Desalination Final EIR and the impacts that result from the construction are described in detail in Section 4.5 of the Final EIR (Marine Resources). The primary change in the construction plan is to site the outfall farther away from the existing up coast kelp bed (see below) to reduce potential construction impacts to reefs and kelp habitat as well as to reduce the potential for long-term encroachment of higher-than-ambient salinities on sensitive reef habitats.

Additionally, the construction of the brine effluent pipe (and the intake structure) would occur over a four-week period in late spring or summer rather than during the autumn, as originally proposed in the Final EIR.

The revised MBIRP (Appendix C) describes the measures to be taken to avoid, reduce, and compensate for construction-level impacts on the marine environment. Please refer to the referenced documents that describe potential short-term and long-term impacts to marine resources and mitigation measures to avoid and reduce impacts to marine resources. No additional construction-related impacts are expected as a result of changes in the outfall design.

Operation of the Brine Discharge Pipe

Effluent Plume Dispersion. Discharged brine with a salinity above ambient values (approximately 32.9 $^{o}/_{oo}$ to 33.8 $^{o}/_{oo}$ one meter above the sea floor in the local project area) has a potential to affect the distribution and abundance of local marine organisms which may be intolerant to intermittent or sustained high salinities.

Water Engineering & Modeling (1995) modeled the characteristics of the Cambria desalination facility near field effluent plume in the Zone of Initial Dilution (ZID) and the farfield movement of the plume as it disperses from the ZID under different plant operation conditions. The farfield attention was focused on kelp beds located approximately 100 m (328) ft north of the diffuser, and 200 m (656 ft) south of the diffuser. The nearest kelp bed was originally identified as being within 50 m of the diffuser system in the Final EIR; however design changes have resulted in the placement of the diffuser farther away from the up coast kelp bed.

The study modeled eight cases of plant operation with varying recovery rates, discharge rates and brine salinity and the number of diffuser ports in operation. These cases were performed to determine the worst-case scenario for potential impacts to marine organisms. The function of the diffuser is to disperse brine water into the ocean with enough velocity and momentum to initiate mixture of the brine discharge with ample seawater to reduce the salinity to within 3% of the ambient salinity of the surrounding water. The operational characteristics of the diffuser are affected by many factors including the efficiency of the RO membranes, the discharge velocities and the characteristics of the water column. Within the study, recovery rates of 40% and 50% were utilized for operation of the facility. Based on an intake volume

of 2,000 gpm, a 40% recovery rate yields a 1,200 gmp discharge rate with an initial brine salinity of 54.4 parts per thousand. Similarly, a 50% recovery rate yields a 1,000 gmp discharge rate with an 65.6 ppt initial brine salinity.

The ambient salinity used during the analysis was 33 $^{0}/_{00}$. Importantly, site specific oceanographic data (current speed, water temperature, salinity, and density) collected at the project site between late August 1994 and late June 1995 (Marine Resource Consultants, Inc. 1995) were used to obtain modeling results. The range of current speeds used in the model varied between 0.1 cm/sec and 40 cm/sec in order to find the worse-case salinity elevation within the nearby kelp beds. Most current speed measurements were low and varied between 2 and 7 cm/sec. Over 70 % of the measured values were less than 5 cm/sec. Current speeds as high as 40 cm/sec were recorded during storm events. The range of bottom water salinities measured during the surveys varied between 32.9 and 33.8 $^{0}/_{00}$. Highest values occurred during the springtime upwelling oceanographic season.

The discharge plume will be a negatively buoyant falling plume with higher-than-ambient salinity and density at the sea floor. The plume will disperse from the discharge structure in a manner directed by the prevailing currents, reversals of ebb and flood tides that may transport the plume up coast and downcoast, gravitational forces that will direct negatively-buoyant plumes downslope (deeper), and surface mixing processes (swells and turbulence) that will dilute the plume with ambient salinity seawater as it is transported away from the discharge structure.

Exhibit 6 summarize modeling results at the edge of the ZID, and distances of 100 m and 200 m away from the diffusers. Not all of the modeled current speeds are shown in the figures. The six current speeds used in the figures are representative of the entire range of current speeds used in the analyses which are presented in Table 3 of Water Engineering and Modeling (1995).

Under worst-case conditions (full plant operation, 50 % recovery, 21 operational diffuser ports, a discharge of 1,000 gpm, and a brine salinity of 65.6 $^{0}/_{00}$), the plume is diluted and achieves a salinity of 34.6 $^{0}/_{00}$ (105% of ambient salinity) at the outer-edge of the ZID under very low current speeds. Salinity decreases to about 34.2 $^{0}/_{00}$ (104 % of ambient) at a distance of 200 meters from the outfall, potentially impinging upon kelp beds up coast and downcoast of the discharge during periods of maximum kelp cover (late spring to late summer). The biological implications of these predicted salinities are discussed below.

Under the range of operating modes tested, salinity would vary between 33.2 $^{0}/_{00}$ and 34.6 $^{0}/_{00}$ at the outer edge of the ZID, 33.3 $^{0}/_{00}$ to 34.4$^{0}/_{00}$ at a distance of 100 m away from the discharge, and 33.2 $^{0}/_{00}$ to 34.2 $^{0}/_{00}$ at a distance of 200 m away from the discharge. Salinity increases with current speeds up to about 7 to 10 cm/sec; higher current speeds (due to storm activity) decrease salinity. Worst-case farfield salinities occur between current speeds of about 2 to 7 cm/sec.

The acreage of sea floor under the influence of the negatively-buoyant plume (the regulatory defined ZID) will differ according to production levels, current speeds, tidal currents, and mixing process due to turbulence and swells. The definition of the ZID assumes a "static" area up coast and downcoast of the diffuser system and along its entire length (30.4 m, 100 ft). In reality, the ZID is likely to be skewed downcoast of the diffusers most of the time with prevailing downcoast currents; however, the ZID may also oscillate up coast and downcoast with daily tidal-induced currents.

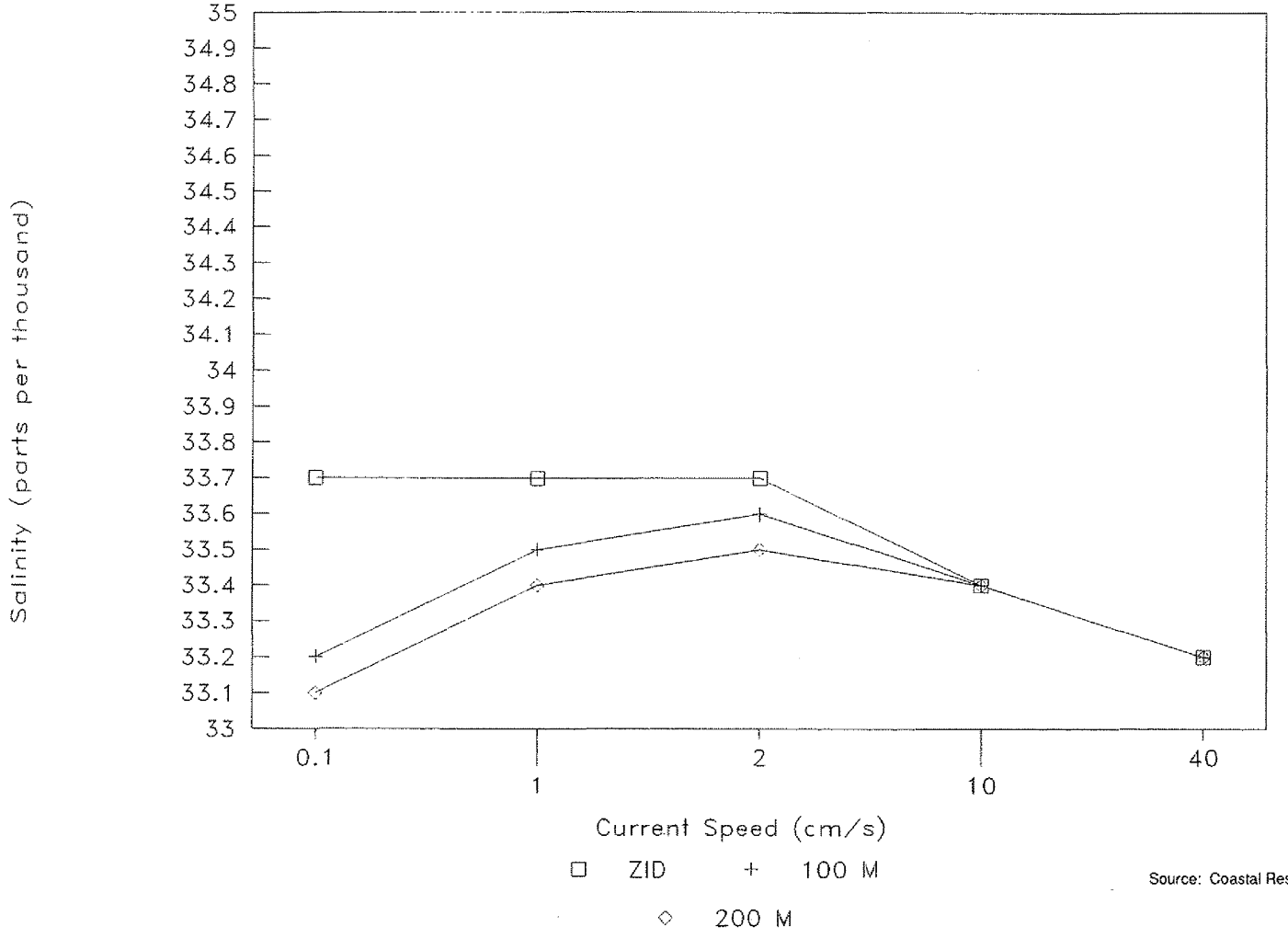
The projected worst-case ZID for the area is 0.11 acre under the 40 % recovery and 21 operational port mode. The narrowest ZID represents an area of 0.02 acre during 50 % recovery and 21 operating ports. Under all operational modes, the ZID is widest under the highest current speeds (Exhibit 5a). Under all conditions, the ZID does not impinge upon kelp bed or reef habitat.

Potential Biological Effects. The degree of biological impacts on marine resources resulting from the discharge of the brine effluent is dependent upon many factors; the duration and magnitude of discharge, the behavior of the effluent plume in the near-field ZID, the behavior of the effluent plume as it is transported away from the ZID by complex interactions of oceanographic processes and bottom topography, and lastly, the ability of marine organisms to respond both physiologically and behaviorally to the discharge brine.

While the brine dispersion model assumes that currents could transport brine either up coast or downcoast, project area current vector analysis suggested current reversals towards the kelp beds were rare events between late August 1994 and the beginning of August 1995 (Marine Resource Consultants, Inc. 1995). These reversals to the northwest accounted for only 5 % of the total data points encompassing a total period of 10 non-consecutive days over a 210 day, 10 month monitored period. In the farfield under a worst case scenario, salinities beyond the

40% Recovery, 21 Ports, 1200 gpm

Salinity as a Function of Current Speed



Source: Coastal Resources Management

Salinity as a function of current speed at the edge of the ZID, 100 meters, and 200 meters away from the diffuser pipe. 40% Recovery, 21 Operational Ports, and a Discharge of 1,200 GPM. Adapted from Water Engineering and Modeling 1995.

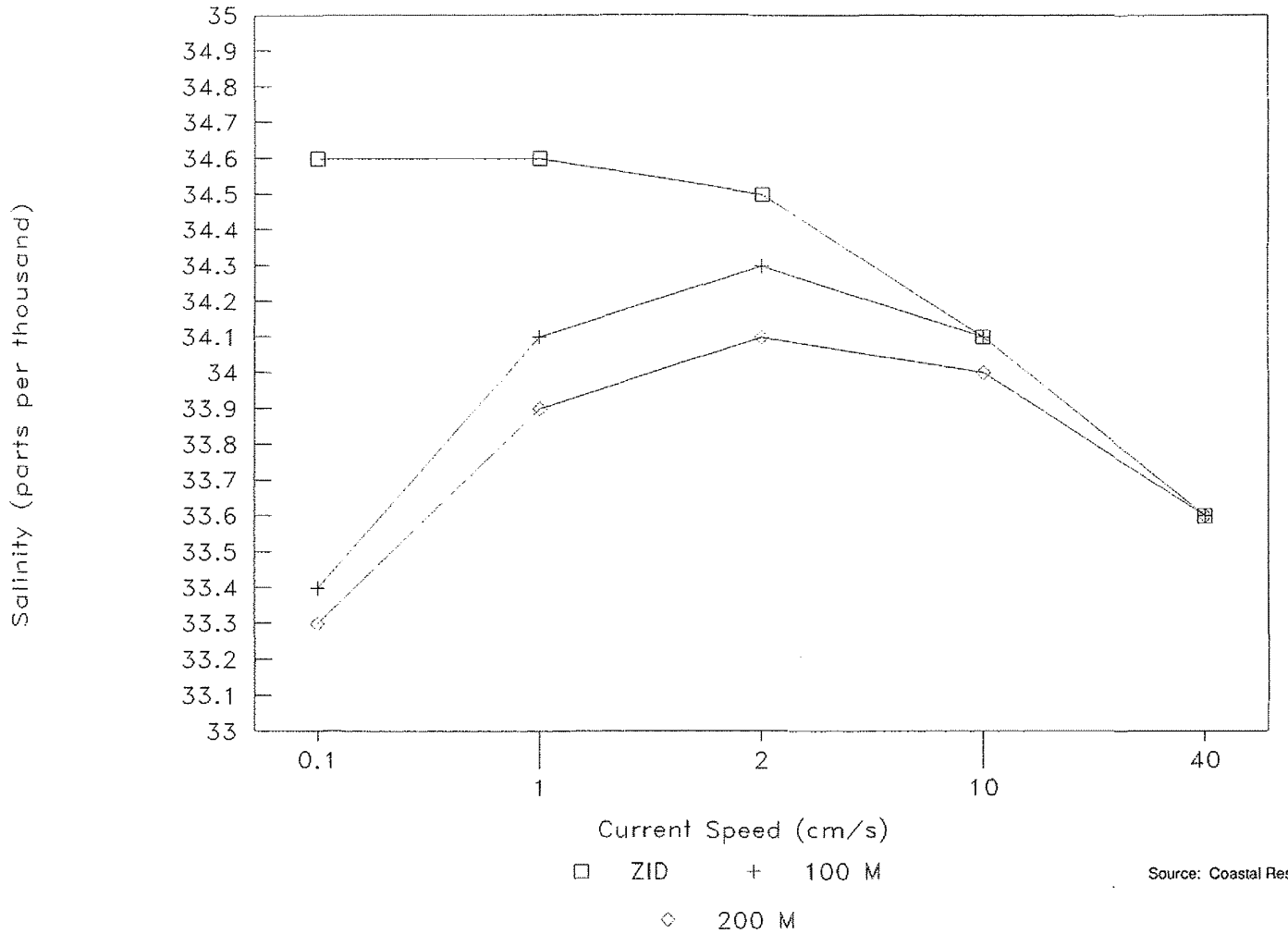
CAMBRIA DESALINATION FACILITY

Results of Brine Discharge Modeling

Exhibit 5a

50% Recovery 21 Ports, 1000 gpm

Salinity as a Function of Current Speed



Source: Coastal Resources Management

Salinity as a function of current speed at the edge of the ZID, 100 meters, and 200 meters away from the diffuser pipe. 50% Recovery, 21 Operational Ports, and a Discharge of 1,000 GPM. Adapted from Water Engineering and Modeling 1995.

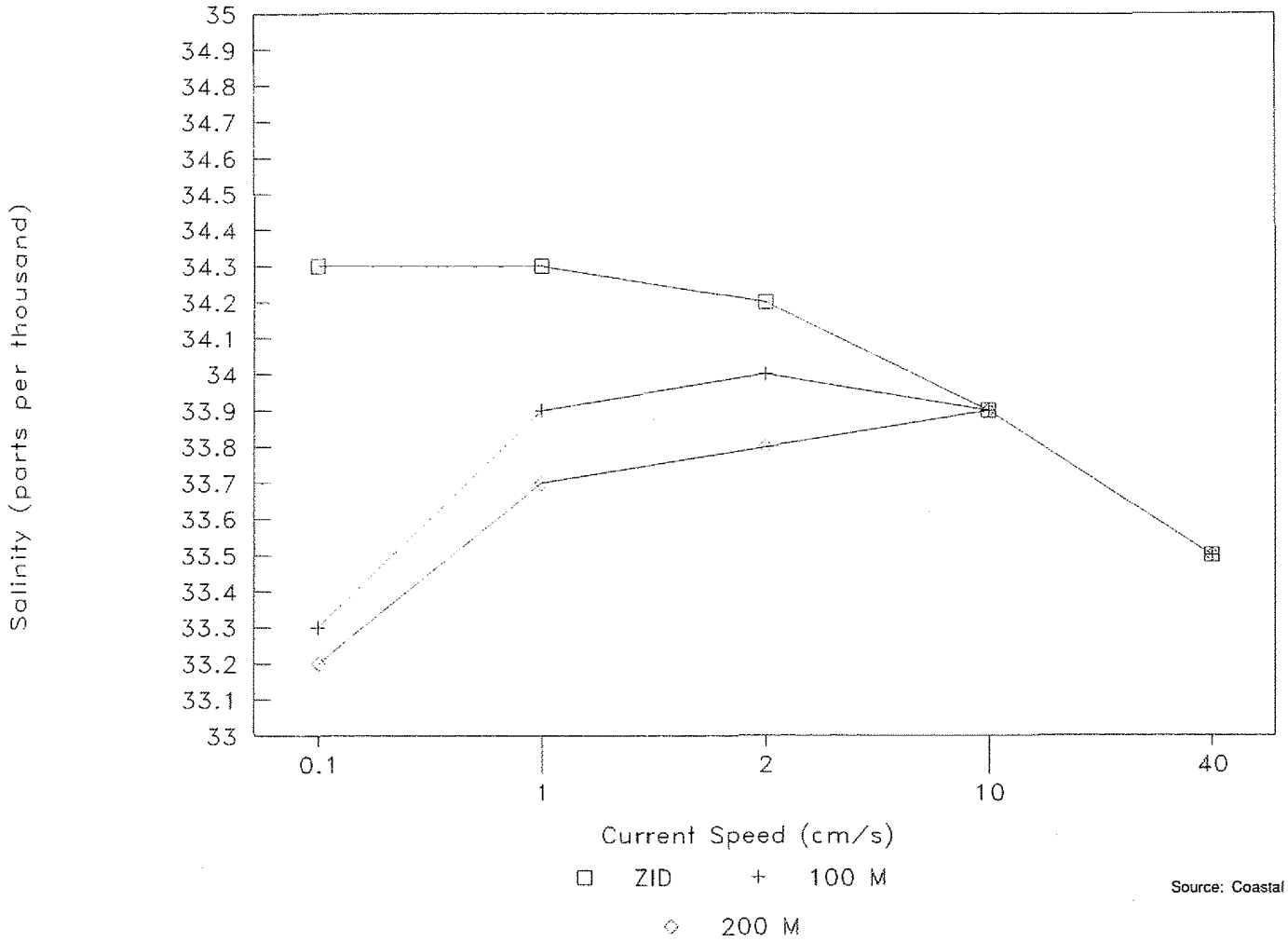
CAMBRIA DESALINATION FACILITY

Results of Brine Discharge Modeling

Exhibit 5b

50% Recovery, 17 Ports, 1000 gpm

Salinity as a Function of Current Speed



Source: Coastal Resources Management

Salinity as a function of current speed at the edge of the ZID, 100 meters, and 200 meters away from the diffuser pipe. 50% Recovery, 17 Operational Ports, and a Discharge of 1,000 GPM. Adapted from Water Engineering and Modeling 1995.

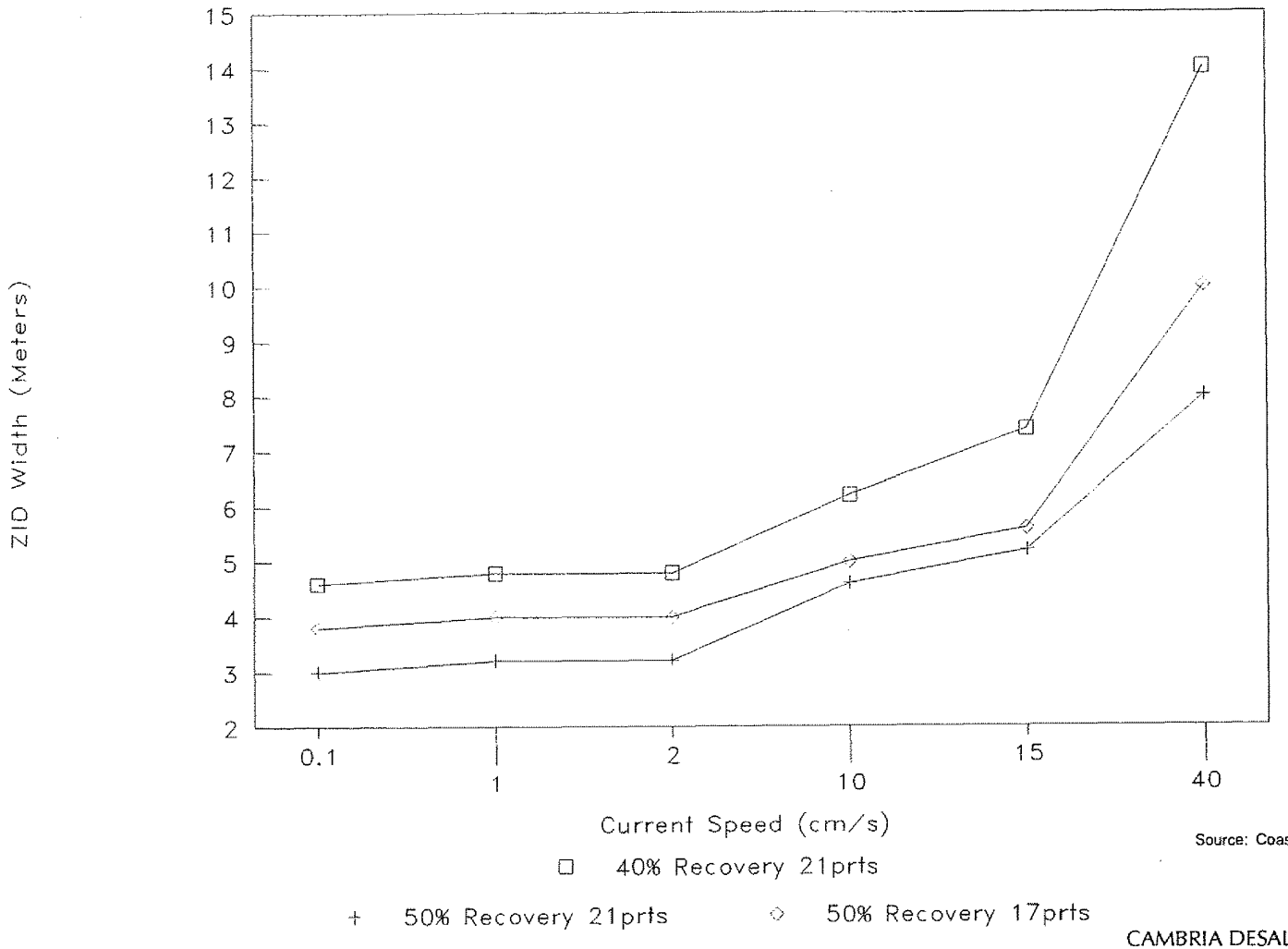
CAMBRIA DESALINATION FACILITY

Results of Brine Discharge Modeling

Exhibit 5c

Cambria Desal Brine Discharge

Width of ZID as a Function of Currents



Source: Coastal Resources Management

CAMBRIA DESALINATION FACILITY

Width of the Zone of Initial Dilution

Exhibit 6

ZID may not be diluted to ambient levels (defined here as 32.9 $^{0}/_{00}$ to 33.8 $^{0}/_{00}$) for at least 200 m (656 ft) up coast or downcoast of the discharge under worse-case operation scenarios.

Regardless of the direction of current flow, the potential for adverse biological impact relative to brine toxicity is extremely low because the predicted salinities at both the 40 % and 50 % recovery modes are within the tolerance limits of sensitive early life-history stages and adults of representative species of marine invertebrates that live in sand and reef habitats in central and southern California (ABA Consultants 1992, Southern California Coastal Water Research Project 1993).

Laboratory toxicity studies conducted to test the effects of increasing salinity on several species of invertebrates and giant kelp using concentrated seawater brine solutions and Diablo Canyon brine (ABA Consultants 1992, Southern California Coastal Water Research Project 1993) suggested that during exposure periods of 2 to 10 days, marine organisms were tolerant of the salinities which are predicted to occur at the edge of the ZID and at distances 100 and 200 m up coast or downcoast of the proposed Cambria desalination diffuser system (33.1 to 34.6 $^{0}/_{00}$ or 100% to 105% of ambient salinity, respectively). Results of these bioassays are summarized in Table 3. The lowest salinity at which a toxic response was elicited on sea urchin development was 36.5 $^{0}/_{00}$ (109% of ambient) in a mixture of brine and wastewater effluent; further testing using only brine elicited a threshold toxic response at 115% of ambient (38.5 $^{0}/_{00}$). Other effects were observed at threshold salinities of 43 $^{0}/_{00}$ (sand dollars) and 48 $^{0}/_{00}$ (olive snails). No threshold responses were observed on the germination potential of giant kelp or on benthic amphipods at salinities up to 38.5 $^{0}/_{00}$.

A detailed discussion of these results are presented in the Cambria Desalination Facility Final EIR, pp 5.4-24 through 5.4-27 and in Response to Comment 10 (Regional Water Quality Control Board) pp 15-104 through pp 15-109 of the Final EIR.

In conclusion:

- The potential for adverse impacts on the marine resources in near shore waters offshore of San Simeon Creek is very low based on site-specific oceanographic and biological data, modeling of predicted brine salinities, and results of laboratory toxicity bioassays on locally occurring marine organisms.

- The primary directional heading of the near shore currents during the last year of observations was southerly (85 % of the observations), while northerly up coast movement of the currents were infrequent occurrences. The currents moved toward the kelp beds 5 % of the time.

- Current speeds were very low, with more than 73% of recorded measurements being less than 5 cm/sec.

- The range of bottom-water salinities was 32.9 to 33.8 psu; the highest values occurred in the springtime (during the Upwelling oceanographic season) when water temperatures were also at their minimum.

- Modeling of the discharge brine suggested that the Zone of Initial Dilution (ZID) may be 14 m (46 ft) wide under worst-case conditions. This zone would impact sand bottom habitat but not reefs or kelp beds.

- Modeling of the discharge brine suggested that above-ambient salinities (higher than 33 $^{0}/_{00}$ to 33.8 $^{0}/_{00}$) would be present at least 200 m (656 ft) away from the diffusers under worse-case conditions. Higher-than-ambient salinities would be present within the up coast kelp bed should current reversals occur.

- Despite the presence of above-ambient salinities in the sand channel and nearby kelp beds, the range of salinities expected during worse-case operating conditions is within the tolerance limits of giant kelp, sea urchins, sand dollars, benthic amphipods, and olive snails for fertilization, growth and development, and survival. This conclusion is based on laboratory bioassay toxicity tests conducted over periods of 2 to 10 days.

Operational impacts of the discharge system on marine resource groups (i.e, plankton, fish, benthic soft-and-hard bottom invertebrates, seabirds, and marine mammals would not be different than those discussed in the Section 5.4 of the Final EIR and the revised MBIRP (Appendix 3) (Class III - less than significant). The reader is referred to those sections for further information.

7. Ocean Intake Structure

Construction Impacts.

Divers will install the junction box at the terminus of the directional drilling tunnel and the open water intake structure. The structure will be pre-fabricated and lowered to the bottom from the construction barge. Anchoring blocks attached to the intake structure, auger anchors, and fluidization techniques will secure and anchor the intake and junction box to the sea floor.

During construction of the intake structure, approximately 230 cubic yards (cy) of sand will be excavated and then partially backfilled with concrete following the installation of the pre-fabricated intake structure. The excavation could result in a temporary and slight elevation in water turbidity. Over a five-month period between March and July 1995, bottom water turbidity varied from 0.6 NTUs to 32 NTUs (Coastal Resources Management, unpublished data). Turbidity will likely be within these ranges during the construction period and is not expected to result in adverse impacts to benthic communities or water column organisms.

The excavation of the sand material will result in a permanent reduction of approximately 560 ft^2 of sand bottom habitat which represents 0.09% of the sand channel habitat between the depths of 23 ft and 30 ft MLLW. This loss of sand bottom habitat is considered to be an unavoidable, Class III less than significant impact on soft bottom resources.

The excavation and replacement of sand bottom habitat with the open water intake structure hardscape will be substantially less of an environmental impact compared to the potential short-term and long-term environmental impacts to the sea floor under the seawater infiltration gallery option proposed in the Final EIR. Sea floor disturbances during the construction and operation of the 900 ft-long by 20 ft-wide infiltration gallery would have impacted 18,000 ft^2 of sand bottom habitat, or about 6% of the soft bottom habitat between the 27 and 32 ft contours. Therefore, this option is less environmentally damaging to the sea floor environment.

In the long-term, soft bottom habitat will be replaced with hardscape that will be colonized by reef-associated algae (including kelp) and invertebrates, and will attract a variety of fish species.

Operational Impacts

The intake velocity (0.2 ft/sec) will be comparable to ambient ocean current speeds which were measured to be generally less than 0.16 ft/sec (5 cm/sec) but infrequently as high as 1.3 ft/sec (Marine Resource Consultants, Inc. 1995). The velocity and flow volumes are also less than most other intake structures in Southern California near shore waters including intakes for Southern California Edison generating stations located between Oxnard and San Onofre (Table 4). The Cambria desalination intake structure will have slightly higher intake velocity and intake volumes than the proposed Santa Barbara desalination facility intake structure.

Entrainment of Marine Organisms. The open water intake design will entrain plankton, fish eggs, and invertebrate and fish larvae that are small enough to pass through the intake's 0.125 mm (1/8 inch)-slotted screens and that cannot escape the 0.2 ft/sec current generated by the intake pumps. These organisms will accumulate and expire in the onshore sand filters at the desalination facility. Plankton losses will vary seasonally with highest mortality during the spring and early summer oceanographic upwelling season. Estimates of near shore zooplankton losses per day could potentially vary from 700 cubic centimeters (cc) to 2,800 cc per day (strained volume) based upon CalCOFI displacement volumes for the central California offshore waters (CalCOFI 1971 in Bureau of Land Management 1980).

Since planktonic organisms regenerate quickly and the near shore waters are within a zone of moderate plankton productivity because of local upwelling processes, plankton mortality is not expected to adversely affect local or regional populations of plankton (Class III, less than significant impact).

Impingement of Marine Organisms. The intake pipes will be surrounded by cylindrical screens with a mesh diameter of 1/8 inch (0.125 mm) to prevent debris, fish, and macroinvertebrates from entering the intake pipes. The low intake current speed (0.2 ft/sec) will also prevent these organisms from being trapped against the screens. However, drift kelp, other algae, and seagrasses may temporarily foul the intake screens following storms that dislodge vegetation from the sea floor.

Biofouling. Debris will be periodically removed from the screens using an air backwash system once a day. This will deliver a burst of air simultaneously to both screens for a duration of about 3 to 5 seconds at a pressure of 35 psi over the ambient seawater pressure (29.4 psi). The

Table 3

RESULTS OF BIOASSAY STUDIES
INVESTIGATING THE EFFECTS OF ELEVATED SALINITY ON MARINE ORGANISMS

Reference	Organism	Response variable	Fluid Medium	Salinity Level and Effect (0 = no effect, X = adverse affect)										
				ppt %(1)	33.5 100	34.5 103	35.5 106	36.5 109	38.5 115	40 119	43 128	48 143	50 149	55 164
1	Giant Kelp	Germination	Concentrated seawater		0				0			0		
1	Giant Kelp	Germ tube growth	Concentrated seawater		0				0			0		
1	Giant Kelp	Survival	Concentrated seawater			0	0	0	0					
1	Giant Kelp	Germ. & Growth	Diablo Canyon brine 2		0	0	0							
1	Sea Urchin	Fertilization	Diablo Canyon brine 2		0	0	0							
1	Sea Urchin	Embryo Devel.	Concentrated seawater and muni. wastewater		0			X						
1	Sea Urchin	Embryo Devel.	Concentrated seawater		0			0	X					
2	Olive Snails	Survival	Concentrated seawater						0		0	0		
2	Sand Dollars	Survival	Concentrated seawater						0		0	X		
3	Mysids	Survival	Concentrated seawater										0	X
4	Scallops	Embryo Devel.	Concentrated seawater							X				

Notes: 1. Percent of ambient salinity is calculated assuming ambient salinity = 33.5 ppt. The Draft EIR for the Cambria Desalination Plant conservatively assumed ambient salinity = 33.0 ppt.
2. Diablo Canyon Desalination Plant brine was tested in concentration so 2%, 5% and 10%, which correspond to dilution ratios of 49:1, 19:1 and 9:1, respectively. Corresponding salinities were estimated for this table assuming an ambient salinity of 33.5 ppt and a desalination brine salinity of 60 ppt.

References:
1. Southern California Coastal Water Research Project, 1993. Investigation of desalination plant toxicity. September 10. Westminster, California. Prepared for EIP Associates, Santa Barbara, California.
2. ABA Consultants, 1992. Effects of hypersaline water on survival of *Olivella pycna* and *Dendraster excentricus*. November, Capitola, California. Prepare for EIP Associates, Santa Barbara, California.
3. McLusky, D.S., 1979. Some effects of salinity and temperature on the osmotic and ionic regulation of *Pranus flexuosus* Crusteacea, Mysidacea from Iseford. Ophelia 18:191-203.
4. Tettelback, S.T. and E.W. Rhodes, 1981. Combined effects of temperature and salinity on embryos and larvae of the northern bay scallop *Argopecten irradians irradians*. Marine biology 63:249-256.

Source: Cambria Community Services District Desalination Facility EIR

Table 4

COMPARISON OF INTAKE VELOCITY AND FLOW VOLUMES OF THE CAMBRIA DESALINATION FACILITY WITH OTHER FACILITY SEAWATER

Seawater Intake Location	Velocity ft/sec	Flow Volume (gal/min)
Cambria Desalination Facility proposed	0.2	2,000
Santa Barbara Desalination Facility proposed	<0.1	635
Southern California Edison SCE Ormond Beach Generating Station	2.7	476,000
SCE Redondo Beach Generating Station Units 7 and 8	2.5	468,000
SCE El Segundo Generating Station	2.4	144,000
SCE Huntington Beach Generating Station	2.0	356,000
SCE San Onofre Generating Station Units 2 and 3	1.7	830,000
SCE Redondo Beach Generating Station Units 5 and 6	1.2	144,000

Sources: Kevin Herbinson, Southern California Edison pers. comm Woodward Clyde Consultants 1991

Oceaneering Technologies Inc. pers. comm.

Metric Conversions:

ft/sec x 0.3048 = meters/sec

gal/min x 0.003785 = cubic meters/min

total volume of air released will be about 1.5 times the screen interior volume for each screen, or 63.5 ft^3 (Ken Gluck, Oceaneering Technologies, Inc. pers comm).

This release of air will create underwater noise (sound) with a frequency of 1-7 khz. The sound pressure level is anticipated to be on the order of 135 Db referenced to 1uPa @ 1 meter and could be audible at low levels to fishes and marine mammals if they were immediately adjacent to the intake structure.

The primary purpose (and the primary biological impact) of the air backwash system is the removal of biofouling organism larvae and debris that is attached or caught on the screen which could impede the flow of seawater into the system. The burst of air may elicit a startle response from fishes and marine mammals (harbor seals, sea lions, and sea otters) in the unlikely event that individuals are present near the screens when the air burst occurs. This would be extremely short-term and would result in a Class III, less than significant impact to populations of fishes or marine mammals in the project area.

Periodical cleaning of the inside of the intake pipe will be conducted using a mechanical "pigging" device designed to remove debris and biofouling organisms such as barnacles, ectoprocts, and algae.

In summary, the operation of the ocean intake pipes will have a less than significant impact on marine life. Methods to control the growth of biofouling organisms are designed to minimize disturbances to marine life outside the intake and discharge pipe systems.

MITIGATION MEASURES

Mitigation measures to avoid, reduce, and compensate for potential impacts to marine habitats and organisms are identified in Appendix 3, based upon revised project engineering and design plans. Because the project impacts are less than those identified in the Final EIR and the draft MBIRP, no additional mitigation measures are required.

UNAVOIDABLE ADVERSE IMPACTS

No unavoidable adverse impacts to marine resources or endangered species are anticipated as a result of the construction or operation of the Desalination Plant. Project modifications do

not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.5 CULTURAL RESOURCES

The following discussion is based on the Cultural Resources Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

The increase in capacity from 1.008 mgd to 1.15 mgd to facilitate the participation of SSCSD in the desalination project will not result in additional impacts to cultural resources than those identified in the Final EIR. No alterations to the Desalination Plant square footage beyond that addressed within the Final EIR will occur. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

The Final EIR provides detailed archaeological data using existing records, surface surveys as well as subsurface testing of possible project areas. The brine disposal upsizing will not result in additional impacts beyond those identified in Section 5.5, Cultural Resources. The area designated for trenching and excavation is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measures nos. 25 through 29 which require archaeological monitoring during construction and evaluation of excavated material, as necessary, will reduce construction impacts to less than significant levels.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term impacts as identified in the Final EIR. Page 5.5-9 of the Final EIR states that soil sampling in the flag lot area indicates that potential construction impacts would be reduced to less than significant levels with implementation of mitigation measures nos. 25 through 29. Mitigation measure #27 states that a Data Recovery Program consisting of excavation of the upper 150 cm of soil (five feet) within the caisson shall occur prior to drilling activities.

4. Drilling Operation Modification

The directional drilling technology exhibits similarities to the microtunneling construction process identified in the Final EIR. Operations will require a construction staging area as discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging areas would include parts of the bluff top property, portions of the County roadway and other CCSD properties/easements located in the vicinity. Mitigation for archaeological resources emphasize construction monitoring during the entire excavation process including initial vegetation and fill removal, as well as trenching and drilling activities. The monitoring and data recovery program will reduce the significance of short-term impacts, as stated in the Final EIR.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no affect on Cultural Resources. Page 5.5-11 of the Final EIR states that underground drilling and construction of outfall transmission facilities will not have an adverse affect on any known significant marine cultural resources.

6. Diffuser Port Modification

The proposed diffuser port modification will have no affect on cultural resources. Page 5.5-11 of the Final EIR states that underground drilling and construction of outfall transmission facilities will not have an adverse affect on any known significant marine cultural resources.

7. Ocean Intake Structure Modification

The proposed modification to the ocean intake structure will have no affect on Cultural Resources. Page 5.5-11 of the Final EIR states that underground drilling and construction of outfall transmission facilities will not have an adverse affect on any known significant marine cultural resources.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.5 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.6 LAND USE AND RELEVANT PLANNING

The following discussion is based on the Land Use and Relevant Planning section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

The increase in capacity from 1.008 mgd to 1.15 mgd to facilitate the participation of SSCSD in the desalination project will not result in additional impacts to Land Use and Relevant Planning than those identified in the Final EIR. No alterations to the Desalination Plant square footage beyond that addressed within the Final EIR will occur. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Page 5.6-8 of the Final EIR states that pipeline trenching and installation may result in temporary construction impacts which will be mitigated to less than significant levels. The area designated for trenching and excavation is consistent with the area identified in the Final EIR.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term impacts as identified in the Final EIR. Page 5.6-9 of the Final EIR states that temporary impacts in the bluff area would extend onto the currently undeveloped adjacent parcels to the north and south. The proposed transmission pipelines and caisson would not be a long-term incompatible land use with the existing/planned surrounding land uses as facilities would be located underground, potential construction impacts would be temporary in nature and cease upon completion of construction activities.

4. Directional Drilling Modification

The directional drilling technology exhibits similarities to the microtunneling construction process identified in the Final EIR. Operation will require a construction staging area as

discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging areas would include parts of the bluff top property, portions of the County roadway and other CCSD properties/easements located in the vicinity. Page 5.6-9 of the Final EIR states that the construction staging area would be located near the western extent of the proposed flag lot easement for drilling and microtunneling equipment. A similar area of approximately 100 feet by 150 feet is anticipated for directional drilling. No significant adverse impacts regarding land use compatibility or relevant planning have been identified.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no additional affect on Land Use and Relevant Planning for the project. Additional permitting beyond the procedures and policies identified in the Final EIR have not been identified.

6. Diffuser Port Modification

The proposed diffuser port modification will have no additional affect on Land Use and Relevant Planning for the project. Additional permitting beyond the procedures and policies identified in the Final EIR have not been identified.

7. Ocean Intake Structure Modification

The proposed Intake Structure Modification will require the relocation of approximately 230 cubic yards of marine sediment onshore for disposal. This activity will be subject to regulatory requirements, is not considered a significant impact and no additional mitigation measures are required. Page 5.6-19 of the Final EIR states that the CCSD would be required to adhere to applicable permit procedures identified during the permitting process which reduces impacts to less than significant levels.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.6 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.7 AESTHETICS/LIGHT AND GLARE

The following discussion is based on the Aesthetics Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

The increase in capacity from 1.008 mgd to 1.15 mgd to facilitate the participation of SSCSD in the desalination project will not result in additional impacts to aesthetics than those identified in the Final EIR. The Desalination Plant building footprint and square footage is consistent with the Final EIR. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline (Desalination Plant to Bluff Caisson)

The Final EIR provides a review of aesthetic impacts due to trench line construction, construction debris, the presence of construction equipment, truck traffic and stockpiling of materials along the pipeline route. The brine disposal upsizing will not result in additional impacts beyond those identified in Section 5.7, Aesthetics/Light and Glare. The area designated for trenching and excavation is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measures nos. 30 and 31 for grading, staging areas and storage areas would reduce short-term impacts to less than significant.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term and long-term impacts as identified in the Final EIR. Page 5.7-7 of the Final EIR states that due to the sensitive nature of visual resources along the coast and in order to remove any real or perceived impact of visual obstruction, mitigation measure number 35 requires the installation of all mechanical facilities for the shaft facility below grade, thereby eliminating the need for a service building/structure on the flag lot.

4. Drilling Operation Modification

The directional drilling technology exhibits similarities to the microtunneling construction process identified in the Final EIR. Operations will require a construction staging area as discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging areas would included parts of the bluff top property, portions of the County roadway and other CCSD properties/easements located in the vicinity. As stated on page 5.7-6, construction will cause a temporary aesthetic nuisance which is not considered significant due to the limited construction time line and requirement to reduce the visibility of construction equipment.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no significant aesthetic impact to the local area.

6. Diffuser Port Modification

The proposed diffuser port modification will have no significant aesthetic impact to the local area.

7. Ocean Intake Structure Modification

The proposed Intake Structure Modification will have no significant aesthetic impact to the local area.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.7 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project modifications. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.8 NOISE

The following discussion is based on the Noise Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

An increase in the Desalination Plant capacity will result in a similar impact as stated in the Final EIR. The project is expected to increase the ambient noise levels on-site due to increased human presence and daily operational activities. Noise generated by the Desalination Plant would consist of a continuous mechanical noise generated by the operation of pumps and other equipment. The increase in capacity will not result in significant noise impacts as the building containing the high pressure pumps and reverse osmosis units are sufficiently insulated to contain noise generated within the building. In addition, due to the location of the project to the nearest noise sensitive receptor, noise levels from the Desalination Plant at the CCSD property boundaries are anticipated to be as low as 30 dB or current ambient levels. If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Construction activities are consistent with the area identified in the Final EIR. Installation of the upsizing brine pipeline will result in similar short-term construction noise impacts as identified in the Final EIR. Construction activities are anticipated to temporarily exceed County of San Luis Obispo noise standards. These impacts, however, would be temporary and cease upon project completion.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term construction noise impacts as identified in the Final EIR. Construction activities are anticipated to temporarily exceed County of San Luis Obispo noise standards. These impacts, however, would be temporary and cease upon project completion.

As stated in the Final EIR, long-term noise impacts are not expected due to the fact that the pumps located within the bluff-top caisson will be enclosed within the bluff top caisson. The Final EIR provides mitigation requirements for reducing short-term and long-term noise impacts to less than significant levels.

4. Drilling Operation Modification

Construction noise impacts associated with drilling activities on the bluff top will result in similar short-term construction noise impacts as identified in the Final EIR. Construction activities are anticipated to temporarily exceed County of San Luis Obispo noise standards. These impacts, however, would be temporary and cease upon project completion. As stated on page 4-18 of the Final EIR, staging area would include parts of the bluff top property, portions of the County roadways and other CCSD properties/easements located in the vicinity. Although the technique for tunneling has changed, the required mitigation for construction remains applicable, including mitigation measure No. 36 for reducing noise impacts to less than significant levels.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no additional noise impacts than what was cited in the Final EIR.

6. Diffuser Port Modification

The proposed diffuser port modification will have no additional noise impacts than what was cited in the Final EIR.

7. Ocean Intake Structure

The proposed structure will have no additional noise impacts than what was cited in the Final EIR.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.8 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project modifications. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.9 AIR QUALITY

The following discussion is based on the Air Quality section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

Short-Term. As identified in the Final EIR, short-term air quality impacts would occur during site preparation and project construction, although these would not be significant. As noted in the Final EIR, construction emissions would fall well below the Air Pollution Control District (APCD) thresholds. Due to the fact that the same area will be graded and prepared with the increase in capacity, the conclusions and recommended mitigation measure within the Final EIR remains applicable.

Long-Term. In order to analyze a worst-case scenario, the Final EIR evaluated long-term impacts associated with a twelve month, 24-hour operation. Although it should be noted that it is anticipated that the Desalination Plant would operate continuously for a period of approximately four months each year and during severe drought situations, the plant may need to operate on a full time basis beyond the estimated four months. Therefore, due to the fact that the increase in capacity will involve running the plant for extended periods of time during normal operations, potential impacts have been addressed within the Final EIR which evaluated a worst case scenario of operating for twelve months, 24-hours a day.

If the SSCSD does not participate in the project, the Plant capacity will remain at 1.008 mgd.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Short-Term. As stated in Final EIR, grading and excavation activities would be required for construction of the Desalination Plant and transmission facilities. An increase in the diameter of the brine pipeline by 4 inches (8-inch to 12-inch) will result in similar short-term construction impacts as discussed in Section 5.9, "Air Quality" of the Final EIR. The area designated for trenching and excavation is consistent with the area identified in the Final EIR.

Implementation of Final EIR mitigation measure No. 39 would reduce short-term impacts to less than significant levels.

3. Bluff Caisson Modification

Short-Term. Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term impacts as identified in the Final EIR due to the fact that the same area will be excavated. Although construction emissions would fall well below the APCD thresholds, the Final EIR provides mitigation in order to reduce short-term impacts to less than significant levels.

4. Drilling Operation Modification

Short-Term. The directional drilling technology exhibits similarities to the microtunneling construction process identified in the Final EIR. Construction activities associated with drilling operations will result in similar short-term impacts as identified in the Final EIR due to the fact that a similar area will be impacted. Although construction emissions would fall well below the APCD thresholds, the Final EIR provides mitigation in order to reduce short-term impacts to less than significant levels.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipeline)

Refer to the "Drilling Operation Modification" discussion above.

6. Diffuser Port Modification

Construction activities associated with diffuser port modification will result in similar short-term impacts as identified in the Final EIR.

7. Ocean Intake Structure Modification

Construction activities associated with the intake structure will result in similar short-term impacts as identified in the Final EIR.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.9 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project modifications. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.10 HUMAN HEALTH/RISK OF UPSET

The following discussion is based on the Human Health/Risk of Upset Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

Alterations to transmission facilities in order to accommodate the increase in plant capacity and the associated risks to human health in the vicinity of the project site are discussed below in detail. As noted in the Final EIR, consumption of desalinated ocean water would have no impact on public health. Therefore, no impacts associated are anticipated with the increase in plant capacity.

Operation of the Desalination Plant would result in the generation of spent treatment chemicals; therefore, an increase in plant capacity will result in an indirect increase in spent chemicals. However, aqueous chemical waste generated by reverse osmosis membrane cleaning and laboratory analyses would be relatively non-toxic and would be discharged to the sanitary sewer after use. The generation and disposal of spent chemicals would result in less than significant levels.

There are two basic groups of chemicals that are to be sent to the ocean in the concentrate stream; 1) pretreatment chemicals and, 2) RO membrane cleaning chemicals.

Pretreatment Chemicals

Sulfuric Acid. Acid will be added to the RO feed water to reduce the bicarbonate concentration to reduce the possibility of calcium carbonate formation in the membranes and to reduce the pH. The amount of acid that will be added to the sea water is expected to be about 60 mg/L. The hydrogen ions from the acid will be "consumed" in the reaction with the bicarbonate ion which results in the formation of carbon dioxide gas and water (H20). Besides being innocuous, the concentration increase in the RO concentrate resulting from the addition of acid will be insignificant. The materials returned to the ocean are not toxic.

Antiscalant. An antiscalant will be added to the RO feed water to control scale precipitates and reduce particulate fouling within the membranes. The antiscalant used will be

Hypersperse AF 150 made by Argo Scientific or a like product by another manufacturer. Hypersperse is certified by the National Sanitation Foundation (NSF) for use in treating potable water. Typical dosage is between 6 and 8 mg/L which produces a concentration of 10-12 mg/L in the RO concentrate. It should be noted that this material is not hazardous as defined by 49 CFR 172.01 by the US Department of Transportation and is non-toxic at concentrations to be used in Cambria.

Ferric Chloride. Ferric chloride (FeCl3) coagulant may be added to the sea water supply prior to the pretreatment process. Ferric chloride is commonly used in the treatment of municipal water supplies. If it is used, it will be fed at an approximate 45 percent solution into the raw sea water at a rate of 10 to 20 mg/L as iron. When in contact with the sea water, the ferric chloride reacts with water to produce ferric hydroxide and hydrochloric acid, slightly reducing the pH of the water. Ferric hydroxide has a very low solubility in water, and will form a precipitate. This precipitation process ends to promote agglomeration of fine particles suspended in the water. With gentle agitation (flocculation) the particles grow large enough to settle or be filtered out easily. The products returned to the ocean are non-toxic.

Coagulant. Depending on the type of prefiltration system used, there may or may not be a need for a coagulant aid. Coagulant aids are use to improve the efficiency of colloidal solids removal by multimedia filters. For pretreatment of RO feed water, the polymer is injected as a solution. One such material is Filtermate 150 made by Argo Scientific. This product is also listed as non-hazardous by the US Department of Transportation. These types of products are commonly used in the treatment of municipal drinking water supplies. This material is classed a non-carcinogenic by the federal OSHA and CalOSHA.

Sodium Bisulfite. It is possible that sodium bisulfite may be used. This chemical is a reducing agent that is used to remove oxygen or chlorine from water, for example. If it is used, the only products that will end up in the concentrate stream for return to the ocean would be sodium and sulfate. The bisulfite component is converted to water and sulfate ion. The question of sulfate addition was discussed under "sulfuric acid". There would be no toxic materials discharged to the ocean as a result of using sodium bisulfite.

RO Membrane Cleaning Chemicals

Polyamide Membrane Cleaner. A polyamide membrane cleaner such as Argo Scientific's Bioclean 442 will be used to clean the RO membranes from time to time. Bioclean 442 is used to remove biological and organic foulants (from the sea water) from membranes. Membrane

cleaning frequency varies depending on the specific situation. Typically, sea water RO membranes may be expected to go two or three months or more between cleaning. The cleaning solution may be used several times before disposal is necessary. Bioclean 442 is not carcinogenic. It is not listed as hazardous by the US Department of Transportation. If disposed of to the ocean as is typically done, the several hundred gallons of membrane cleaner would be bled into the concentrate return stream to obtain a very low concentration of membrane cleaning solution.

Polyamide Membrane Cleaner for Organics and Particulates. This type of product may also be used to clean the RO membranes. IPA 411, made by Argo Scientific, is one such product. This type of membrane cleaner is used to remove organics, silts, and other particulate deposits from RO membranes. This product is not a known carcinogen Neither is it labeled as hazardous by the US Department of Transportation. As with the Bioclean 442, this chemical is usually disposed of to the ocean. The several hundred gallons of membrane cleaner would be bled into the concentrate stream to obtain a very low concentration as described above.

As noted in the Final EIR, operation of the Desalination Plant would involve the transportation, storage and use of hazardous materials and would present the possibility of a hazardous release. However, preliminary design for the Desalination Plant specifies internal storage of chemicals. Both internal and external storage would be evaluated during final design, and appropriate local regulatory agencies would be consulted to ensure public safety, thus, potential impacts to human health with the increase in plant capacity is considered to be at less than significant levels.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.10 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project modifications. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.11 TRANSPORTATION AND UTILITIES

The following discussion is based on the Transportation and Utilities section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

1. Capacity Increase (1.008 MGD to 1.15 MGD)

Traffic

Short-Term Construction. An increase in the Desalination Plant capacity will result in a similar impact as stated in the Final EIR. The project is expected to have minimal increases in traffic volumes and some disruptions to traffic flow due to construction activities. Implementation of recommended mitigation measures identified in the Final EIR is anticipated to reduce construction traffic impacts to a less than significant level.

Long-Term Operations. An increase in the Desalination Plant capacity will result in a similar impact as stated in the Final EIR. Operation of the proposed facility would result in a slight, but not significant, increase in traffic volumes on local streets.

Utilities

Electrical Service. An increase in the Desalination Plant capacity will result in a similar demand for electricity as addressed in the Final EIR; therefore, no additional impacts are anticipated.

Gas Service. An increase in the Desalination Plant capacity will result in a similar demand for gas services as addressed in the Final EIR; therefore, no additional impacts are anticipated.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Construction activities are consistent with the area identified in the Final EIR. Installation of the upsizing brine pipeline will result in similar short-term construction impacts as identified in the Final EIR. With implementation of recommended mitigation measures identified in the Final EIR, potential temporary traffic impacts are anticipated to be reduced to a less than significant level.

3. Bluff Caisson Modification

Construction activities associated with installation of the vertical caisson on the bluff top will result in similar short-term construction impacts as identified in the Final EIR. With implementation of recommended mitigation measures identified in the Final EIR, potential temporary traffic impacts are anticipated to be reduced to a less than significant level.

4. Drilling Operation Modification

Construction activities associated with drilling activities on the bluff top will result in similar short-term construction impacts as identified in the Final EIR. With implementation of recommended mitigation measures identified in the Final EIR, potential temporary traffic impacts are anticipated to be reduced to a less than significant level.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipelines)

The proposed upsizing will have no additional traffic impacts than what was cited in the Final EIR.

6. Diffuser Port Modification

The proposed diffuser port modification will have no additional traffic impacts than what was cited in the Final EIR.

7. Ocean Intake Structure

The proposed structure will have no additional traffic impacts than what was cited in the Final EIR.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.11 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project modifications. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.

3.12 PUBLIC SERVICES

The following discussion is based on the Public Services Section of the Final Environmental Impact Report and review of the project revisions as discussed in Section 2, "Project Description," of this document.

ANALYSIS

1. Capacity Increase (1.008 MGD to 1.15 MGD)

Fire. An increase in the capacity of the Desalination Plant is not expected to result in any significant impacts to fire service. Fire hazards are considered to be low and fire/medical response times would not be altered with implementation of the proposed project revisions. Mitigation measures nos. 45 and 46 are required for Fire Services.

Parks and Recreation. As noted in the Final EIR, the proposed Desalination Plant would not create long-term significant parks and recreation impacts due to its location and design considerations. Due to the fact that components within the Desalination Plant associated with the increase in capacity will also be enclosed within the proposed structure, long-term land use impacts are not anticipated.

Police. The increase in capacity will result in similar short-term impacts to police service as discussed in the Final EIR. Construction projects are potential targets for crime in the form of tool and material theft and malicious mischief and arson. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 47.

Solid Waste. The increase in capacity will result in similar short-term impacts as identified in the Final EIR. It is estimated that a small insignificant but unknown amount of solid waste associated with construction activities will be generated. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 48.

2. Brine Pipeline Upsizing (Desalination Plant to Bluff Caisson)

Parks and Recreation. As stated in Final EIR, construction activities may result in temporary noise, traffic, visual and fugitive dust impacts to San Simeon State Park campground facilities. An increase in the diameter of the brine pipeline by 4 inches (8-inch to 12-inch) will result in similar impacts associated with the installation of the pipeline as discussed in the Final EIR. The area designated for trenching and excavation is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measures including construction and erosion control as identified in the appropriate sections of the Final EIR (i.e. Geology, Soils and Seismicity; Hydrology, Drainage and Groundwater; Aesthetics, Light and Glare; Noise; and Transportation) would reduce short-term impacts to less than significant levels.

3. Bluff Caisson Modification

Police. The construction of the bluff caisson as proposed will result in similar short-term impacts to police service as discussed in the Final EIR. Construction projects are potential targets for crime in the form of tool and material theft and malicious mischief and arson. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 47.

Solid Waste. The construction of the proposed bluff caisson will result in similar short-term impacts as identified in the Final EIR. It is estimated that a small insignificant but unknown amount of solid waste associated with construction activities will be generated. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 48.

Parks and Recreation. As stated in Final EIR, construction activities may result in temporary noise, traffic, visual and fugitive dust impacts to San Simeon State Park campground facilities. The area designated for excavation of the bluff caisson is consistent with the area identified in the Final EIR. Implementation of Final EIR mitigation measures including construction and erosion control as identified in the appropriate sections of the Final EIR (i.e. Geology, Soils and Seismicity; Hydrology, Drainage and Groundwater; Aesthetics, Light and Glare; Noise; and Transportation) would reduce short-term impacts to less than significant levels.

4. Drilling Operation Modification

The directional drilling technology exhibits similarities to the micro tunneling construction process identified in the Final EIR. Operations will require a construction staging area as discussed in the Final EIR. As stated on page 4-18 of the Final EIR, staging area would include parts of the bluff top property, portions of the County roadways and other CCSD properties/easements located in the vicinity. Although the technique for tunneling has changed, the required mitigation for construction remains applicable.

Police. Implementation of the directional drilling technique will result in similar short-term impacts to police service as discussed in the Final EIR. Construction projects are potential targets for crime in the form of tool and material theft and malicious mischief and arson. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 47.

Solid Waste. Drilling activities will result in similar short-term impacts as identified in the Final EIR. It is estimated that a small insignificant but unknown amount of solid waste associated with construction activities will be generated. As identified in the Final EIR, potential impacts would be mitigated to levels of less than significant through implementation of mitigation measure No. 48.

Parks and Recreation. As stated in Final EIR, construction activities may result in temporary noise, traffic, visual and fugitive dust impacts to San Simeon State Park campground facilities. Implementation of Final EIR mitigation measures including construction and erosion control measures as identified in the appropriate sections of the Final EIR (i.e. Geology, Soils and Seismicity; Hydrology, Drainage and Groundwater; Aesthetics, Light and Glare; Noise; and Transportation) would reduce short-term impacts to less than significant levels.

5. Carrier Pipeline Upsizing (Containing Intake and Brine Pipeline)

The proposed upsizing will have no additional service impacts than what was cited in the Final EIR.

6. Diffuser Port Modification

The proposed diffuser port modification will have no additional service impacts than what was cited in the Final EIR.

7. Ocean Intake Structure Modification

The proposed structure will have no additional service impacts than what was cited in the Final EIR.

MITIGATION MEASURES

Implementation of proposed revisions would not require additional mitigation measures or deletions/modifications to the mitigation measures listed in Section 5.12 of the Final EIR.

UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion above, unavoidable adverse impacts would not occur with implementation of project revisions. Project modifications do not result in new significant impacts and do not render impacts addressed in the Final EIR as more severe.