



7. Alternative to the Proposed Project

7. ALTERNATIVES TO THE PROPOSED PROJECT

In accordance with CEQA Guidelines Section 15126.(d), the following section describes a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluates the comparative merits of each alternative.

The discussion of alternatives focuses on alternatives capable of eliminating significant adverse environmental effects or reducing them to less than significant levels, even if these alternatives would impede, to some degree, the attainment of the project objectives, or would be more costly.

The following alternatives to the proposed project are analyzed below: 7.1 "No Project" Alternative; 7.2 "San Simeon Beach Route" Alternative; 7.3 "Santa Rosa Creek Well Intake" Alternative, 7.4 "Santa Rosa Creek Multiple Intake Wells" Alternative; 7.5 "San Simeon Community Services District" Alternative; 7.6 "Distillation" Alternative; 7.7 "Alternative Components" Alternative; and the "Van Gordon Creek Site" Alternative.

7.1 "NO PROJECT" ALTERNATIVE

Impacts associated with the Cambria Desalination Plant would not occur if the "No Project" Alternative is selected. Implementation of the "No Project" Alternative would avoid any adverse physical and human environmental impacts associated with development of the facility. Impacts associated with Cultural Resources, Terrestrial Biology, Marine Biology, Utilities and Aesthetics would not occur. Short-term impacts associated with the construction phase of the project would also be eliminated.

Under the "No Project" Alternative the CCSD would be restricted from fulfilling its long-term goal of improving the safe yield of the community's water supply. The domestic water for Cambria is supplied from groundwater aquifers. According to projected domestic water requirements, the CCSD will require more water in the future than the groundwater basins can provide especially in dry years. Implementation of the "No Project" Alternative would not provide the CCSD with a mechanism to produce water, thus the increase in water supply needed to maintain current and future populations would not be fulfilled.

Although none of the environmental impacts identified in this EIR would occur with the implementation of this alternative, the "No Project" Alternative is not considered superior,

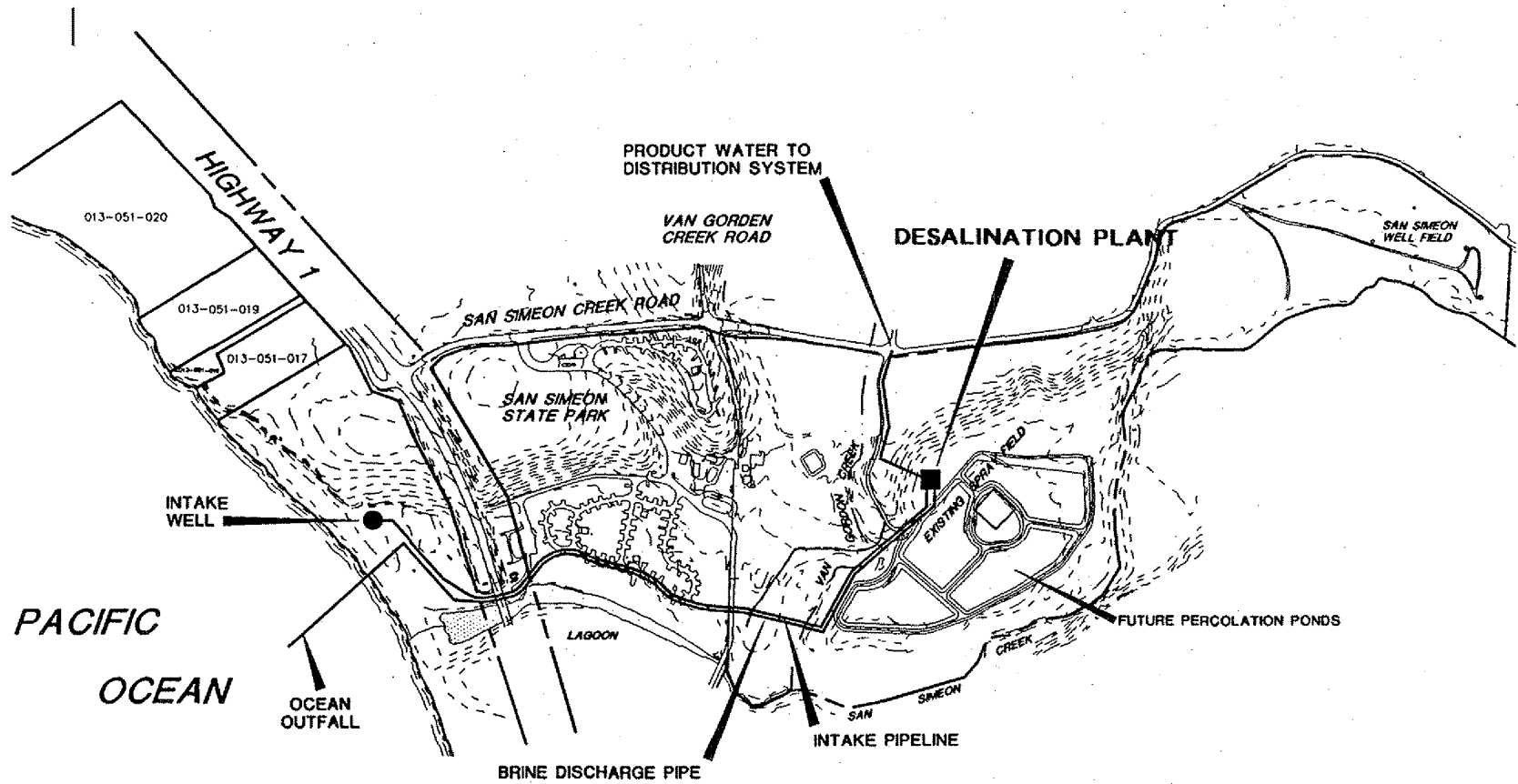
as it would not obtain the project's primary objective of increasing the safe yield of CCSD's domestic water supply.

7.2 "SAN SIMEON BEACH ROUTE" ALTERNATIVE

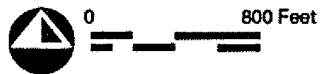
The "San Simeon Beach Route" Alternative differs from proposed project in three aspects. A large beach well known as a Ranney Collector would be used to collect feedwater from the saturated beach sand deposits. Collecting water in this location changes the intake and discharge pipe locations so that they would extend through State Beach property. Exhibit 13, SAN SIMEON BEACH ROUTE, shows the proposed location of these facilities. Exhibit 14 provides a cross section view of the Ranney Collector in the beach. The concentrated seawater outfall pipeline would also be constructed through State Beach property.

A Ranney Collector consists of a vertical shaft approximately 10 to 15 feet in diameter, constructed to a depth of approximately 40 feet below the beach surface. From this shaft, a series of well screen pipes are pushed out horizontally into the surrounding beach sediments. Most of the well screens would be directed under the ocean and would draw seawater in flowing through the sediments on the sea floor. The Ranney Collector would be located on the State Beach up to 200 feet from the ocean. It would be a completely buried structure. In order to avoid the need for maintenance activities on the beach, pumps and control equipment would not be installed in the well. Rather, a pipeline 18 to 24 inches in diameter would be installed at the base of the Ranney Collector and convey the water away from the beach to a point near the campground restrooms adjacent to Highway 1. At this location, a feedwater pump station would be constructed. A three to five foot diameter vertical shaft approximately 50 feet deep would be constructed to intercept the pipeline connected to the Ranney Collector. Submersible pumps would be installed on the floor of the shaft to pump the feedwater to the Desalination Plant.

At the surface of the shaft, a small pump house (approximately ten feet by ten feet) would be constructed in an architectural style consistent with other structures in the park. The pump house would contain all the necessary electrical equipment, pump controls, alarms and monitoring equipment. Maintenance activities would occur at the pump house. The Ranney Collector and associated pipelines are non-mechanical and are not anticipated to require any maintenance.



Source: North Coast Engineering

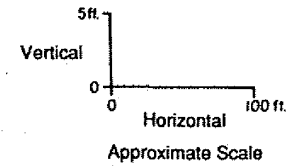
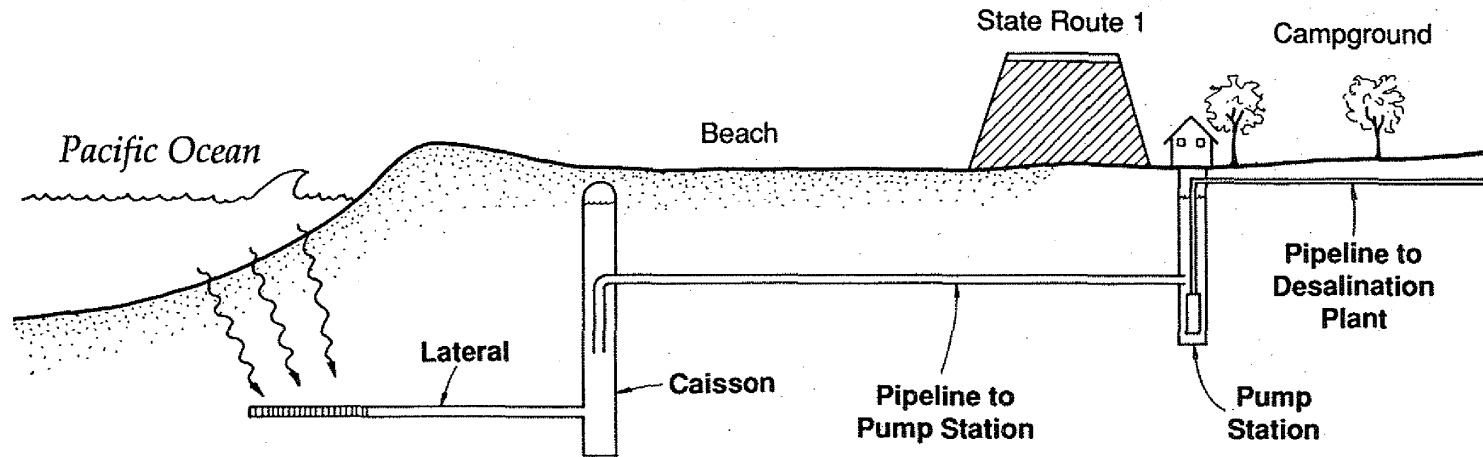


CAMBRIA DESALINATION FACILITY
San Simeon Beach Route

Exhibit 13



Robert Bein, William Frost & Associates
 7-04 JN 30175-4322



Source: Jones & Stokes

CAMBRIA DESALINATION FACILITY
Ranney Collector in Beach

Exhibit 14



Robert Bein, William Post & Associates

7-94

JN 30175-4322

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The feedwater would be pumped to the Desalination Plant via a pipeline located in or next to campground roadways and would be treated in the same manner as described for the proposed project.

The concentrated seawater discharge line would parallel the intake line up to the pump station. The line would be buried in the beach and into the low tide surf zone. Here the line would surface. At this point, two options are available. The pipeline could be extended farther off-shore and then fitted with a diffuser section described previously. On the other hand, the line could terminate at the surf zone which would allow wave action to dissipate the concentrated seawater. Computer models indicate rapid dispersion would occur under both scenarios. The final configuration would be determined during final system design.

The following analysis provides a comparison of the impacts of this alternative with those of the proposed project.

Geology, Soils and Seismicity

Impact Comparison Summary:

- *Desalination Plant: Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities: Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion. Implementation of the "San Simeon Beach Route" Alternative would have similar overall geology and soil impacts as compared to those associated with the proposed project. This alternative would result in similar temporary construction related disruptions, due to the development of the pipeline. Trenching activities would occur within the San Simeon State Park campground access roads, thus temporarily impacting overnight campers. However, with this alternative, trenching required on the west side of Highway 1 will be reduced because of the shorter distance travelled to reach both the terminus of the outfall pipeline and intake well as compared to the proposed project. In addition, as compared to the proposed project, construction related impacts would cease with the completion of trenching activities. Seismic impacts associated with this alternative would be similar to those of the proposed project.

Hydrology, Drainage and Groundwater

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Greater than the Proposed Project.

Discussion: Hydrology and drainage impacts associated with this alternative would be similar to those of the proposed project. However, operation of the Ranney Collector may alter San Simeon Creek lagoon levels as compared to the proposed project. Increases in pumping rates at the Ranney Collector site could result in a drawdown of groundwater thus possibly affecting San Simeon Creek lagoon levels. However, since the CCSD is required under its water rights to maintain streamflow to the lagoon, this potential impact may be mitigated.

Terrestrial Biological and Marine Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Lesser than the Proposed Project.

Discussion: Biological impacts associated with the "San Simeon Beach Route" Alternative would be, for the most part, similar to those of the proposed project. However, biological impacts associated with the placement of transmission facilities required for this alternative route would reduce potential impacts to marine resources as compared to the proposed project. This alternative would avoid short-term impacts associated with construction activities and long-term impacts associated with the intake of water directly from the ocean which may result in the loss of marine species as a result of impingement and entrainment.

Sandy intertidal habitat would be permanently removed when the Ranney Collector is installed. The removal of beach sand and associated sandy intertidal organisms (primarily polychaete worms and amphipod crustaceans) would have a less than significant, Class III impact on intertidal resources. Construction of the pipeline leading from the Ranney

Collector will not impact rocky intertidal or wetland resources. Construction equipment and personnel could have secondary impacts on rocky intertidal habitat, as vehicles traverse the shoreline. However, these impacts would likely be a less than significant, Class III impact. Further damage would be avoided through educational programs for the field crews.

Benthic organisms in the surf zone and any organisms below the water table in the beach will be subjected to slowly percolating seawater. The resulting impact is expected to have less than significant impacts on these organisms. No other resource group or habitat will be affected by the long-term operation of the Ranney Collector.

The segment of the alignment planned across Van Gordon Creek and within San Simeon State Park, is located adjacent to riparian communities. In addition, a portion of the alignment is also adjacent to San Simeon Creek Lagoon and the associated Coastal Salt Marsh Community. ~~Should this alternative become the preferred alternative, the CCSD will be required to complete comprehensive biological assessments pertaining to impacts to the lagoon and coastal salt marsh habitats.~~ The riparian community forms a corridor along San Simeon Creek and portions of Van Gordon Creek. Portions of Van Gordon Creek were re-routed within the existing sprayfield area. Isolated remnants of the former channel and associated Central Coast Arroyo Willow Riparian Forest were observed.¹ Where a new channel was constructed, low-growing herbaceous plants dominated, including cattail, Italian thistle, watercress, dock, loosestrife, brass buttons, rabbits-foot grass, horsetail rush, and iris-leaved sedge. Occasional arroyo willows 1-3 feet tall were becoming established.

Under this alternative, the transmission facilities would traverse a portion of the reconstructed channel. It has been determined that special status species potentially occur in the vicinity of the transmission facilities. These species include Arroyo de la Manzanita, Compact Cobweb Thistle, Red-legged Frog, Two-striped Garter Snake, and Southwestern Pond Turtle. Short-term terrestrial impacts are potentially greater than the proposed project due to the proximity of the transmission facilities' construction area to the riparian habitat and the alignment of Van Gordon Creek. It should be noted that impacts would cease with the completion of construction and the revegetation of the affected area.

¹ Biological Assessment for the Cambria Community Services District Effluent Disposal Field Improvements and Stream Restoration Project, D.W. Alley & Associates, July 15, 1993.

Cultural Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: The "San Simeon Beach Route" Alternative is anticipated to have similar impacts upon cultural resources as compared to the proposed project. The alternate route will pass through areas identified as culturally significant, however, the alternative would be designed to avoid archaeological sites which have been identified.

Land use and Relevant Planning

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: Routing the transmission facilities through the San Simeon State Park Campground would result in similar impacts associated with the proposed project. However, short-term construction impacts would be greater than the proposed project due to the temporary interruption to Park activities and disruption of internal Park circulation during trenching activities. Construction impacts are considered significant, but short-term. Potential mitigation measures could include limiting construction times to off-peak hours and off-peak days of the year and the use of screening materials. It should also be noted that the District will be required to obtain an easement and/or other approvals to install the transmission facilities on State Parks property.

Aesthetics, Light and Glare

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Greater than the Proposed Project.

Discussion: The "San Simeon Beach Route" Alternative would result in similar visual impacts to those of the proposed project. However, because the transmission facilities are routed through the San Simeon State Park campground, short-term aesthetic impacts would be greater than those of the proposed project. Impacts to Park users include trenching activities, construction debris, and presence of construction equipment, however these impacts would cease upon project completion.

The intake well and ocean outfall pipeline would not impact existing views of the project area or the San Simeon State Park campground as they both would be installed below ground surface. However, because of the proximity to the ocean and the need to bury the Ranney Well, pumps and control equipment cannot be installed in the well. A pipeline would be installed at the base of the Ranney Well which would allow water to flow to a shaft which would be constructed near the existing restroom facilities adjacent to Highway 1. At the surface of this shaft, a small pump house (approximately ten feet by ten feet) would be constructed in an architectural style consistent with other structures in the park. Additional methods, such as screening the building with natural vegetation, can be utilized to mitigate potential visual impacts.

Noise

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: The "San Simeon Beach Route" Alternative would result in similar noise impacts to those of the proposed project. However, because the transmission facilities are

routed through the San Simeon State Park campground, short-term noise impacts would be greater than those of the proposed project. Noise impacts to park users, which would temporarily exceed County noise standards, would be generated by trenching activities and construction equipment. It should be noted that these impacts would cease upon project completion. The pump house inside the campground would be constructed of masonry materials and sound proofed so that the pumps would not increase noise above existing background levels.

Air Quality

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Lesser than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: The "San Simeon Beach Route" Alternative would result in similar long-term air quality impacts to those of the proposed project. Because the transmission facilities are routed through the San Simeon State Park Campground, less construction time is required to install the facilities due to the shorter distance to the beach. Therefore, short-term air quality impacts would be slightly reduced as compared to the proposed project.

Human Health/Risk of Upset

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: The "San Simeon Beach Route" Alternative would result in similar potential public health impacts as compared to those of the proposed project.

Transportation and Utilities

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: Routing the transmission facilities through the San Simeon State Park Campground would result in similar long-term traffic and utility impacts as compared to the proposed project. Utility vehicles will be required to conduct periodic equipment and monitoring reviews at the pump station location on the Park's property. These vehicular trips would be limited and are not considered significant. However, short-term traffic impacts would be greater than the proposed project due to the temporary interruption to Park activities and disruption of internal Park circulation during trenching activities. Construction impacts are considered significant, but short-term. Potential mitigation measures could include limiting construction times.

Public Services

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: Routing the transmission facilities through the San Simeon State Park Campground would result in similar long-term public service impacts as compared to the proposed project. However, short-term impacts would be greater than the proposed project due to the temporary interruption to Park services during trenching activities. Construction impacts are considered significant, but short-term. Potential mitigation measures could include limiting construction times.

Conclusion

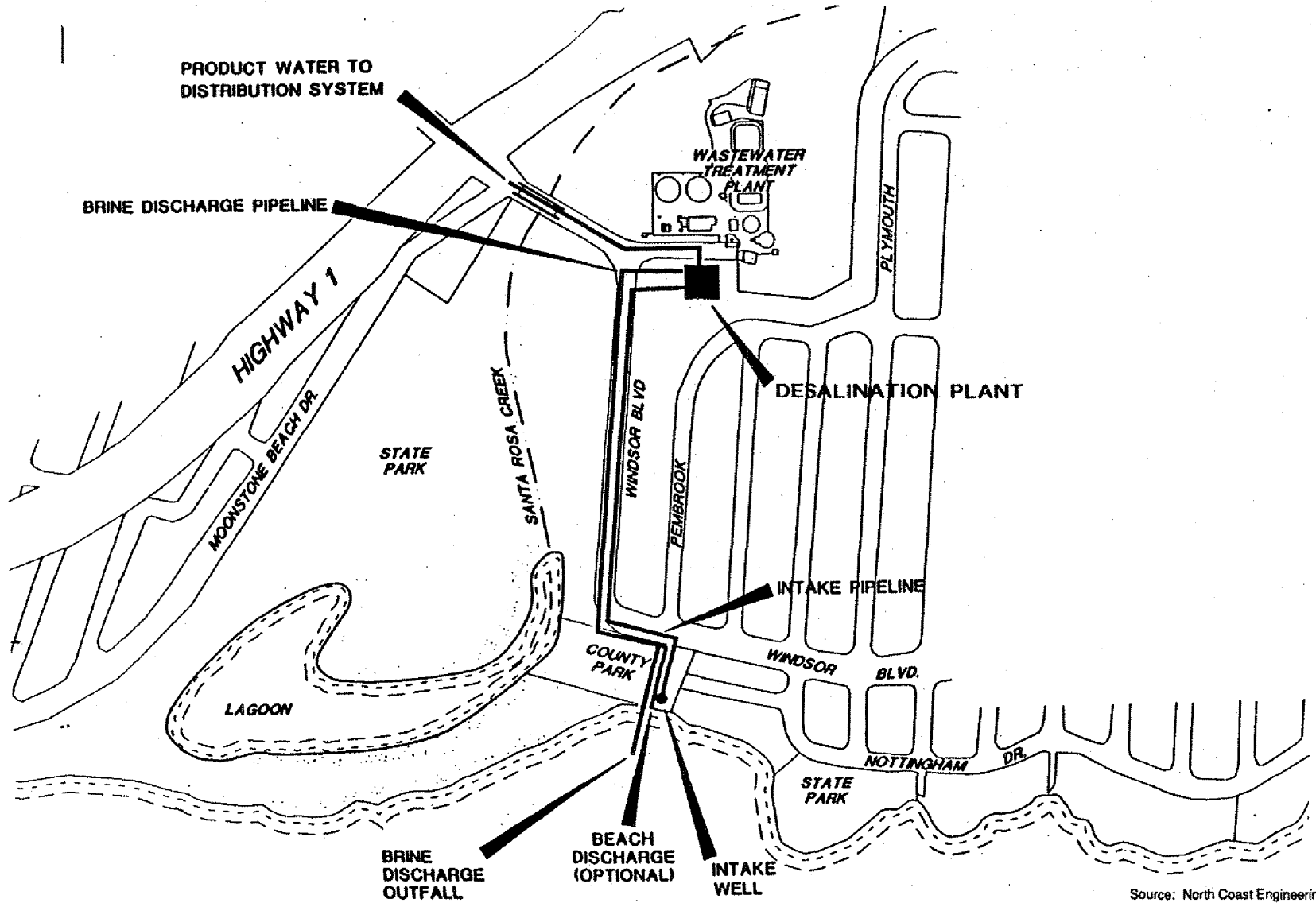
When the District determined to pursue a desalination project, two alternative facility scenarios were to be evaluated equally as optional development proposals throughout this EIR document. The North San Simeon Route (the proposed project) and the San Simeon Beach Route Alternatives were considered as viable water supply options. In order to determine the feasibility of the San Simeon Beach route alternative, test wells within San Simeon beach were required in order to understand the viability of the Ranney Well collector. A request by the CCSD to conduct testing was presented to the California State Parks and Recreation and was subsequently denied on April 28, 1994. Thus, this option was reconsidered as an alternative to the proposed project, the North San Simeon Route alignment.

This alternatives analysis concludes that the San Simeon Beach development scenario may be considered as a viable alternative, subject to additional Beach Well testing. Impacts at the Reverse Osmosis site are similar to the project, as well as the location of ocean outfall facilities. Pipeline and pumping facilities may result in greater short-term impacts to the park facilities, San Simeon State Beach and Van Gordon Creek habitat. These impacts are considered significant as compared to the proposed project and mitigation would be required to reduce potential impacts. Long-term impacts to lagoon levels and associated habitat may be significant, pending the results of testing wells and additional biological review.

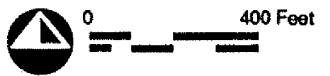
7.3 "SANTA ROSA CREEK WELL INTAKE" ALTERNATIVE

The "Santa Rosa Creek Well Intake" Alternative differs from proposed project in two aspects. A large beach well known as a Ranney Collector would be used to collect feedwater from the saturated beach sand deposits near Shamel Park (a County park) at the mouth of Santa Rosa Creek. The Desalination Plant would be located near the CCSD wastewater treatment plant. Collecting water in this location changes the intake and discharge pipe locations to extend along Windsor Boulevard and the County Park property. Exhibit 15, SANTA ROSA CREEK WELL INTAKE, shows the proposed location of these facilities. The concentrated seawater discharge outfall would also be constructed through the County Park property.

A Ranney Well consists of a vertical shaft approximately 10 to 15 feet in diameter, constructed to a depth of approximately 25 feet below the beach level. From this shaft, a



Source: North Coast Engineering



CAMBRIA DESALINATION FACILITY
Santa Rosa Creek Well Intake

Exhibit 15

RB Robert Bein, William Post & Associates
 7-94 JN 90175-4322

series of well screen pipes are pushed out horizontally into the surrounding beach sediments. Most of the well screens would be directed under the ocean to capture seawater flowing through the sediments. The Ranney Well would be located within the County Park. The feedwater would be pumped to the Desalination Plant via a pipeline located in or next to Windsor Boulevard, and treated in the same manner as described for the proposed project.

The concentrated seawater discharge line would parallel the intake line. The line would be buried in the County Park, the beach and into the low tide surf zone. Here the line would surface. At this point, two options are available. The pipeline could be extended further off-shore and then fitted with a diffuser section. On the other hand, the line could terminate at the surf zone which would allow wave action to dissipate the concentrated seawater. The final configuration would be determined during final system design.

The following analysis provides a comparison of the impacts of this alternative with those of the proposed project.

Geology, Soils and Seismicity

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: Implementation of the "Santa Rosa Creek Well Intake" Alternative would have similar overall geology and soil impacts as compared to those associated with the proposed project. Soil on the proposed project site consists primarily of Salinas Silty Clay Loam. Also included in this map unit are a few small areas of Cropley clay and Marimel silty clay loam. The amount of surface runoff associated with this soil ranges from slow to medium with a slight to moderate water erosion potential.

Salinas Silty Clay Loam is suitable for development, however, the structure should be designed with consideration of the soil's moderate strength and moderate shrink-swell potential. Implementation of the project would require the removal of unsuitable soils and replacement with compacted fill material to mitigate potential impacts associated with the onsite soil's moderate strength and moderate shrink-swell potentials. In situations involving the installation of piping, a high degree of compaction and moisture control, careful

placement of material and special piping design should be incorporated to overcome the piping limitations typical of Salinas silty clay loam.

This alternative would result in similar temporary construction related disruptions, due to the development of the pipeline. Trenching activities would occur within the County Park, thus temporarily impacting day use of the park facility. However, as compared to the proposed project, construction related impacts would cease with the completion of trenching activities. Seismic impacts associated with this alternative would be similar to those of the proposed project.

Hydrology, Drainage and Groundwater

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Greater than the Proposed Project.

Discussion: Hydrology and drainage impacts associated with this alternative would be similar to those of the proposed project. The Desalination Plant would be located just above the 100-year flood level immediately downstream of the existing CCSD Wastewater Treatment Plant. It would not be inundated or increase flood levels in upstream areas. Operation of the Ranney Collector may alter Santa Rosa Creek lagoon levels as compared to the proposed project. Increases in pumping rates at the Ranney Collector site could result in a drawdown of groundwater thus possibly affecting Santa Rosa Creek lagoon levels. Test wells would be required to render a conclusion.

Terrestrial Biological and Marine Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Lesser than the Proposed Project.

Discussion: Biological impacts associated with the "Santa Rosa Creek Well Intake" Alternative would be, for the most part, similar to those of the proposed project. However, biological impacts resulting from the placement of transmission facilities associated with this alternative's route would be similar to and/or less than the proposed project. This alternative would avoid impacts that would occur upon the bluff top area of the "flag" lot and impacts associated with developing two trenches offshore. In addition, this alternative would avoid impacts associated with the intake of water directly from the ocean which could result in the loss of marine species as a result of impingement and entrainment. Further evaluation of marine resources in the project vicinity would be required to ascertain impacts resulting from outfall facilities.

Cultural Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Lesser than the Proposed Project.*
Operational Impacts-Lesser than the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Lesser than the Proposed Project.*
Operational Impacts-Lesser than the Proposed Project.

Discussion: Surveys conducted in the vicinity of the alternative site indicated that no evidence exists of significant historical resources. However, the potential exists for finding cultural resources during construction activities as similar to the proposed project. Based on the fact that the proposed project is located in an area identified as culturally significant, and that no evidence exist of significant historical resources in the vicinity of the alternative site, the "Santa Rosa Creek Well Intake" Alternative would result in lesser impacts to cultural resources as compared to the proposed project.

Land use and Relevant Planning

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Greater than the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: Residential land uses are located directly south of the proposed Reverse Osmosis facility and along Windsor Boulevard (adjacent to the proposed pipelines). In addition, well facilities would be located within Shamel Park. This Alternative would result in potentially significant short-term impacts to the surrounding residential uses and the County Park during construction. The County of San Luis Obispo General Services Department has indicated that they would potentially oppose construction of facilities within Shamel Park although an appropriate mitigation agreement may be considered (mitigation determined on a case-by-case basis and may include fees, land dedications, etc).² These impacts could be minimized with implementation of mitigation measures, although further environmental review and coordination with the County would be necessary. On a long-term basis, the proposed Desalination Plant would be compatible with the existing wastewater treatment plant and the proposed wells and underground pipelines may be potentially compatible with the County Park. However, the project may be potentially incompatible with the existing residential uses due to the type of use involved (treatment facility in close proximity to residential uses).

The primary land use designation for this site is Residential Single-Family (RSF) with combined use designations for sensitive resource and terrestrial habitat areas. The proposed project is permitted in this land use designation as a "S-1" allowable use subject to design objectives of overlay designations.

As with the other Alternatives, issuance of a coastal development permit from the County Planning Department would be required in addition to appropriate permits/approval from other County departments (building permit, grading permit, public works permit, and Hazardous Materials Business Plan). As this Alternative involves construction of pipelines and wells within Shamel Park (County Park), additional County approvals would be required beyond those required for the project. The County has indicated that, at a minimum, a lease agreement with the County would be needed to allow development of the pipelines and wells. As previously stated, however, the County also indicated that they would potentially oppose construction of facilities within Shamel Park although an appropriate mitigation agreement may be considered.³ Additional County permits are not anticipated.

² Telephone conversation with Mr. Tim Galliger, San Luis Obispo General Services Department, Parks and Recreation Division, September 9, 1993.

³ Telephone conversation with Mr. Tim Galliger, San Luis Obispo General Services Department, Parks and Recreation Division, September 9, 1993.

Aesthetics, Light and Glare

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Greater than the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: The Alternative would result in greater visual and aesthetic impacts than the proposed project. The proximity of nearby residents would result in the need for extensive mitigation and buffering techniques in order to offset impacts at the Desalination Plant site. Lighting impacts would also need to be considered. The intake well and ocean outfall pipeline would not impact existing views of the project area as they both would be installed below ground surface.

Noise

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Greater than the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: The "Santa Rosa Creek Well Intake" Alternative would result in greater noise impacts as compared to the proposed project since transmission facilities would be constructed within Shamel Park and along a residential street (Windsor Boulevard) and the Desalination Plant would be located adjacent to residential uses. Short-term construction noise impacts would be greater than those of the proposed project due to the close proximity of sensitive noise receptors. Noise impacts to Park users and residents would temporarily exceed County noise standards. It should be noted that these impacts will cease upon project completion. Operational noise impacts of the Reverse Osmosis facility may be greater than the proposed project due to the close proximity of residential units to the facility.

Air Quality

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: The "Santa Rosa Creek Well Intake" Alternative would result in similar air quality impacts as compared to the proposed project. The local residents may experience air nuisance associated with construction equipment emissions.

Human Health/Risk of Upset

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts- Similar to the Proposed Project.*

Discussion: This alternative would result in similar potential construction related public health impacts as compared to those of the proposed project.

Transportation and Utilities

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.
Operational Impacts-Similar to the Proposed Project.*

Discussion: Construction traffic would temporarily impact the existing surrounding residential land uses. Construction traffic may utilize Windsor Boulevard as the primary construction access route. In this case, measures such as limited construction hours would need to be considered. Installation of the proposed pipelines within Windsor Boulevard

may create circulation/access impacts to the uses located along this roadway. Mitigation in the form of detour plans (signage, flagmen, etc.) should be considered. With implementation of mitigation measures, potential impact are anticipated to be reduced to less than significant levels.

Operational traffic may need to travel on residential streets (along Windsor Boulevard). Limitations on truck access in the residential areas may need to be considered (i.e. established maximum weight for trucks in residential area, limit truck delivery hours). The surrounding street system would not be significantly impacted by operation traffic due to the limited number of anticipated trips.

Public Services

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: Routing the transmission facilities through Shamel Park would result in similar long-term public service impacts as compared to the proposed project. However, short-term impacts would be greater than the proposed project due to the temporary interruption to park services during trenching activities. Construction impacts are considered significant, but short-term.

Conclusion

The Santa Rosa Well intake alternative is considered an Alternative to the proposed project but due to concerns cited which pertain to site development feasibility at the Desalination Plant, the CCSD is no longer considering this alternative as a viable option. Significant concerns and greater impacts have been cited for Drainage, Land Use compatibility, Aesthetics, Transportation and Noise. Further testing and biological assessments would be required in order to ascertain the impacts to and required mitigation for the Santa Rosa Creek, adjacent lagoon, and the ocean environment.

7.4 "SANTA ROSA CREEK MULTIPLE INTAKE WELLS" ALTERNATIVE

As a variation to Alternative 7.3, above, this "Santa Rosa Creek Multiple Intake Wells" Alternative would utilize several additional sources of intake water beyond the intake well at Shamel Park. The basic concept is to have one or more brackish wells located along Santa Rosa Creek, near the Wastewater Treatment Plant, which would provide additional feed water to the Desalination Plant. Due to the fact that water with the least salinity is the most economical to treat, brackish wells along Santa Rosa Creek would be systematically used as additional supply water. The Desalination Plant would be located on a vacant parcel on Heath Lane across from the wastewater treatment plant.

The disposal of brine is assumed to be via ocean outfall. The concentrated seawater discharge line would be buried along Windsor Boulevard, within Shamel Park, the beach and into the low tide surf zone. Here the line would surface. At this point, two options are available. The pipeline could be extended further off-shore and then fitted with a diffuser section. On the other hand, the line could terminate at the surf zone which would allow wave action to dissipate the concentrated seawater. The final configuration would be determined during final system design.

The "Santa Rosa Creek Multiple Intake Wells" Alternative would result in similar impacts as discussed above under the "Santa Rosa Creek Intake Well" Alternative (Alternative 7.3). This alternative would result in greater biological, hydrological, land use, aesthetics, noise, public health, transportation and services impacts as compared to the proposed project. As stated similarly under Alternative 7.3, impacts would be greater than the proposed project because the Desalination Plant and transmission facilities within this alternative are located closer to residential uses. Residential units are located to the south and east of the Desalination Plant site and along the eastern side of Windsor Boulevard. Therefore, residents would be subject to short-term construction impacts as well as some long-term operational impacts, such as an increase in ambient noise levels, as compared to the proposed project. In addition, the multiple wells within or adjacent to Santa Rosa Creek could possibly decrease the water level of Santa Rosa Creek downstream from the wells, which would include the lagoon area. This would result in greater operational impacts when compared to the proposed project. Construction of the wells could also have adverse effects on water quality, channel stability and aquatic life forms. Negative impacts could result from sediments and debris entering Santa Rosa Creek, and increased siltation due to construction activities. If construction activities occur during breeding season, this construction could have a significant effect on the steelhead run. The construction would

also impede the movement of animals. Construction activity would also temporarily disturb wildlife species in the vicinity. However, this impact would be temporary.

7.5 "SAN SIMEON COMMUNITY SERVICES DISTRICT" ALTERNATIVE

As the San Simeon Community Services District's (SSCSD) water demand increased over recent years, the SSCSD's water supply experienced increasing problems with saltwater intrusion. Subsequently, through various water conservation projects, the SSCSD has decreased water demand to avoid this problem. The SSCSD is evaluating methods to increase their available water supply. This alternative proposes to increase the SSCSD's available water supply through participation in the CCSD Desalination Project.

The SSCSD serves the approximately 102-acre Community of San Simeon. The Community of San Simeon, located approximately three miles north of Cambria, is primarily a visitor serving community, particularly for patrons of Hearst Castle which is owned by the State of California. The SSCSD provides water, sewer, fire protection, road maintenance and street lighting services to the approximately 250 permanent residents and an average of approximately 2,500 visitors per day within it's service area. The water supply is derived from two wells that pump from a small groundwater basin at the mouth of Pico Creek. The SSCSD provides water to 198 connections. Until recently, the SSCSD had pumped approximately 140 acre-feet per year for use in the community. Safe yield for Pico Creek is approximately 130 AF per year. Since 1986, a building moratorium and mandated water rationing enacted by the SSCSD has curtailed increases in water demand. San Simeon would require an additional 147.2 acre-feet of water at the time of community buildout.

The SSCSD operates a wastewater treatment plant located on the ocean-front of Balboa Avenue in the Community of San Simeon. The plant has a capacity of 200,000 gallons per day (gpd), 50,000 gpd of which is reserved to serve the Hearst San Simeon State Historical Monument.

SSCSD would receive an established allotment of potable water produced from the Desalination Plant that is agreed upon by the CCSD. This allotment would be above the rated capacity of the Desalination Plant proposed for Cambria's needs. Product water would be transmitted to San Simeon via a transmission line which would be located in the vicinity of Highway 1 and San Simeon Creek Road. The SSCSD transmission line would tie into the Reverse Osmosis Facility from San Simeon Creek Road. Product water would be integrated into the San Simeon water distribution system. Installation of the transmission

facility would result in typical short-term construction related impacts associated with trenching activities.

The following analysis provides a comparison of the impacts of this alternative with those of the proposed project.

Geology, Soils and Seismicity

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: Implementation of this alternative would have similar overall geology and soil impacts as compared to those associated with the proposed project. However, this alternative would result in greater temporary construction related disruptions, due to the development of the pipeline linking the facility with San Simeon. As compared to the proposed project, construction related impacts would cease with the completion of trenching activities. Seismic impacts associated with this alternative would be similar to those of the proposed project.

Hydrology, Drainage and Groundwater

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
 Operational Impacts-Similar to the Proposed Project.

Discussion: Long-term operational impacts upon hydrology and drainage characteristics associated with this alternative would be similar to those of the proposed project. However, this alternative would result in greater temporary construction related disruptions to drainage patterns due to the development of the pipeline linking the facility with San Simeon. As compared to the proposed project, construction related impacts would cease with the completion of trenching activities.

Terrestrial Biological and Marine Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: Biological impacts associated with this alternative would be, for the most part, similar to those of the proposed project. However, biological impacts associated with the placement of the transmission facility associated with this alternative's route would impact additional area as compared to the proposed project. Construction related impacts would cease with the completion of trenching activities. Mitigation in the form of revegetation of disturbed habitat would reduce potential impacts to less than significant levels.

Cultural Resources

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: This alternative is anticipated to have similar impacts upon cultural resources as compared to the proposed project. The alternative's route could possibly pass through areas identified as culturally significant, however, the alternative could be designed to avoid identified archaeological sites. Further analysis by a qualified archaeologist will be required.

Land Use and Relevant Planning

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: Routing the additional transmission facility in the vicinity of Highway 1 would result in similar impacts associated with the proposed project. Short-term construction impacts would be similar to the proposed project. Construction impacts are considered significant, but short-term. Further review will be required for long-term impacts in San Simeon, should a determination be rendered to install additional facilities for water storage.

Aesthetics, Light and Glare

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: This alternative would result in similar visual impacts to those of the proposed project. However, because the transmission facilities are routed in the vicinity of Highway 1 short-term aesthetic impacts would be greater than those of the proposed project. Impacts to motorists include trenching activities, construction debris, and presence of construction equipment, however these impacts would cease upon project completion.

Noise

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: This alternative would result in similar noise impacts to those of the proposed project. However, because the transmission facilities are routed in the vicinity of Highway 1, short-term noise impacts would be greater than those of the proposed project. Noise impacts would be generated by trenching activities and construction equipment. It should be noted that these impacts would cease upon project completion.

Air Quality

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: This alternative would result in similar long-term air quality impacts as compared to the proposed project. Because the transmission facilities are routed in the vicinity of Highway 1 between the Desalination Plant and San Simeón, short-term air quality impacts would be slightly higher as compared to the proposed project.

Human Health/Risk of Upset

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: This alternative would result in similar potential public health impacts as compared to those of the proposed project.

Transportation and Utilities

Impact Comparison Summary:

- *Desalination Plant:* *Construction Impacts-Similar to the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.
- *Transmission Facilities:* *Construction Impacts-Greater than the Proposed Project.*
Operational Impacts-Similar to the Proposed Project.

Discussion: Routing the transmission facility in the vicinity of Highway 1 would result in similar long-term traffic and utility impacts as compared to the proposed project. However, short-term traffic impacts would be greater than the proposed project due to the temporary

gallons of product water; whereas seawater VC plants need about 30 to 35 kWh per 1,000 gallons of product water. The building height for vapor compression plants is higher than for reverse osmosis plants, due to the net positive suction head (NPSH) required for the distillate and brine blowdown pumps. As a result, the height of VC plants typically is about 50 to 60 feet versus about 20 feet for RO plants. Also, noise abatement for VC plants is more difficult. The high speed mechanical compressor is noisier than the high pressure pumps of the RO plant.

Both, multi-stage flash (MSF) distillation plants and multiple effect (ME) distillation plants require a steam source for primary energy. The steam could be from a low pressure boiler dedicated to the desalting plant. Typically, however, MSF and ME plants are coupled to an electric power generating plant in which high pressure steam is used to drive steam generator sets and the low pressure/low grade steam from the turbine exhaust is used to heat the MSF or ME seawater distiller. This combination of generating electric power and producing fresh water from seawater with the power plant exhaust steam is quite economical and is widely used in the Middle East where both water and electric power are needed. However, plants of this type are quite large. The power generation capacity is typically several hundred megawatt (MW) and the water production capacity is in the tens of mgd. The ratio of power production (MW) to water production (MGD) in such plants is typically 10 to 1. Unit size with the MSF evaporators typically employed in the dual purpose plants in the Middle East has grown from about 0.5 mgd to over 8.0 mgd between the 1950s and the present, and small single-purpose MSF plants are no longer economical to build.

Further, the trend in recent seawater conversion installations is away from distillation and towards reverse osmosis. Examples of this include the following:

- Off-Shore Oil and Gas Platforms. These installations generally have on-board seawater desalination units to produce drinking water for operating personnel and process water for the equipment. The older platforms were equipped with distillation units, but since the mid-eighties, most platforms have been equipped with reverse osmosis units.

On the California coast near Santa Barbara, five platforms are equipped with distillation units and four newer ones are equipped with RO units.

- Diablo Canyon Power Plant of PG&E. This nuclear power plant on the central California coast was originally equipped with two 150 gpm seawater evaporators tied to the plants' steam cycle. It was found, however, that these seawater distillers were

only marginally productive when the power plant operated below 80 percent of full power. This deficiency, as well as other reasons for the need for additional water supplies, led to PG&E's decision to install a completely separate seawater desalting system, independent of the power plant steam cycle. A rental (or lease) RO unit was chosen for this new seawater conversion system for economic reasons and for the convenience of not interfering with the steam cycle of the main plant.

- San Diego Gas and Electric. San Diego Gas and Electric proposes to install a 250,000 gpd seawater RO system to provide a water supply, independent of any municipal system, for their boiler feed water system at the Encina Power Plant in Carlsbad, California (WDR, Vol. 29, No. 36, September 16, 1993). Similar to the Diablo Canyon seawater RO plant described above, the Encina seawater RO plant will be a "build-own-operate" installation under a lease contract with the supplier. Also, similar to the Diablo Canyon seawater RO plant, SDG&E opted for an RO system rather than a distillation system for the convenience of not having to interfere with the steam cycle of the main power plant.
- Proposed City of Lompoc Seawater Desalting Plant. Ionics, Inc. was picked by the City of Lompoc, California to supply a 1,000 acre-feet per year seawater desalting plant expandable to 4,000 acres-feet (WDR, Vol. 29, No. 9, March 4, 1993). Bids were for a turnkey facility and either reverse osmosis or distillation technology was acceptable. The only distillation bid received was for a vapor compression (VC) type distillation plant by Ambient Technologies Incorporated of Miami, Florida; the U.S. subsidiary of Israel Desalination Engineering (IDE). Ambient Technologies' VC units would be built in Israel and shipped to Lompoc. Other RO bids were by Polymetrics, L.A. Water Conditioning (no longer in business), and Hydranautics.

The above examples, as well as interviews with Dr. Mike Nelson and Dave Grunau of Aqua Design; meetings with Dr. Safwat Moustafa of Cal Poly; and discussions with other experts, support the conclusion that reverse osmosis is the best technology for a seawater desalination plant to provide Cambria with a water supply unaffected by drought. It is therefore, recommended that the District select reverse osmosis as the best technology for the final design of the proposed seawater desalting plant.

The major reasons for recommending RO over other available technologies can be summarized as follows:

- Seawater conversion to fresh water utilizing RO membranes has become a well established and proven technology over the past 10 to 15 years.
- Literally hundreds of large and small seawater RO plants exist around the world for municipal water supply and resort hotel complexes.
- Since the development of seawater RO, most small to medium sized seawater desalters utilize RO rather than distillation, because reverse osmosis has lower capital costs than distillation and is more suitable for sites where a source of heat or steam is not readily available.
- MSF and MED distillation are still economical to use in dual-purpose plants (co-generation concept), but generally only in rather large installations and in localities where the respective utility supplies both water and power. In addition, experience has shown that the dual-purpose concept works well where the product water is needed on a continuous rather than intermittent basis as in Saudi Arabia and other countries in the Middle East. A few other, smaller dual-purpose systems exist in the Caribbean (primarily Dutch Antilles and the U.S. Virgin Islands); but most of the more recent installations have been either stand-alone vapor compression plants or RO plants.
- While vapor compression plants for seawater built by Israel Desalination Engineering (IDE) may often be competitive in terms of capital cost, their operating cost is marginally higher than RO because power consumption for VC is higher than for RO.
- In addition, building height for VC is greater than for RO, and VC plants are noisier than RO plants. Also, firms manufacturing VC plants are all located east of the Mississippi River and the most experienced manufacturer of seawater VC plants (IDE) is based overseas (Israel). Therefore, spare parts and service may be more difficult to obtain for VC plants than for RO plants. In contrast, several major manufacturers of RO equipment and RO plants are based in California.
- While the co-generation, dual-purpose concept advocated by Dr. Moustafa of Cal Poly is certainly valid as an energy saving concept, it is often difficult to carry out in practice because of institutional barriers and other constraints. In addition, the dual-purpose concept for relatively small seawater conversion capacities is still in the early

stages of commercial development and the major manufacturer(s) of such equipment are located overseas.

- RO for seawater conversion is even used in locations where a source of waste heat or low grade steam would presumably be available, such as at seaside power generation stations. In these cases, it was found that it is more convenient to install a stand-alone, electrically driven RO plant, rather than a steam driven distiller, to avoid interference with the steam cycle of the power plant. For this reason, PG&E at Diablo Canyon and SDG&E at Encina are utilizing RO to produce boiler feed water from seawater.

In conclusion, based on the above-described background, examples and discussions, it can be stated that reverse osmosis should be the technology of choice for the seawater conversion plant the Cambria Community Services District is proposing.

7.7 COMPONENT ALTERNATIVE

Two additional brine discharge scenarios have been considered by the District. Both options would require additional technical review, should the District pursue either Alternative.

Open Discharge across the Beach to the Surf Zone

Under this alternative, the brine would be discharged onto the beach above the high tide line and would flow across the beach to the surf zone. The flow of the brine would create its own small channel. The end of the discharge pipe would probably be located above the highest level affected by winter storm waves. At the San Simeon Creek location, for example, the discharge pipe could be slant-drilled through the bluff and emerge into a rock pile or other protective anchor at the base of the bluff. The effluent stream would cause some local downcutting (channelization) between the outfall and the surf zone, similar in effect to two existing stormwater outfalls at the north end of the San Simeon Creek location. The effects of the channelization would be short-lived and seasonal. The outfall would only discharge during the summer months. Winter storms would eliminate much of the channel each year. If the outfall was anchored to the base or the face of a bluff, any channelization is likely to be washed away by run-up from high tide events. The presence of the channel and effluent flow might be considered aesthetically displeasing. This impact could be minimized by placing the outfall along a bluff face with minimal visual access.

Discharge from a Buried Outfall at the Shoreline

Under this alternative, a buried pipe ending at a subsurface leach line would discharge the brine through the overlying beach sands into the surf zone. This configuration would be more aesthetically pleasing than the open channel discharge alternative, but poses some potential engineering problems. The outfall and leach line would need to be buried deep enough to prevent the pipes from becoming exposed during the winter months (as sands move offshore) and subjected to impacts from storm waves. Additionally, subsurface discharge of liquids would increase the interstitial fluid pressure within the beach sands and could cause the sand to be washed away by waves more easily, resulting in a shallow cove or scallop along the shoreline.

7.8 "VAN GORDON CREEK SITE" ALTERNATIVE

The Van Gordon Creek Site Alternative would consist of a facility similar to the project description, but at an alternate location approximately 500 feet west of the current proposed location for the Desalination Plant. The site is situated adjacent to the Van Gordon Reservoir in an area currently occupied by two farm houses and agricultural structures. These buildings would be removed to construct the Desalination Plant. This location would provide better access via an existing paved access road, south of San Simeon Creek Road. The clear well would be constructed on the east side of the Desalination Plant.

Although this alternative would, for the most part, result in similar impacts to the proposed project, the Van Gordon Creek desalination site would involve greater impacts at the plant site. This location is closer to the State Park's property, thus there would be greater impacts in the following areas in comparison to the project: Land Use Compatibility, Visual Resources, Demolition and Construction Noise, Operational Noise and Cultural Resources Impacts. A portion of the Desalination Plant site impacts Archeological Site SLO-187. Other issues would require further on-site review including soils, hydrology, drainage and Terrestrial Biological Resources.