

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

MMWD is proposing a desalination plant to be located in the City of San Rafael, California. “Raw water” or “feed water” from San Rafael Bay would be collected through an intake at the end of the proposed ~~refurbished~~-rebuilt Marin Rod & Gun Club pier near the Richmond-San Rafael Bridge and subjected to various forms of treatment to produce drinkable (potable) water. The project could ultimately supply up to 15 MGD. As proposed, the project would be constructed in multiple phases. The first phase would construct a 5 MGD facility, and subsequent phases could increase capacity to 15 MGD. The desalination process would convert about half the volume of raw water taken from the Bay into drinking water. The remaining water, or brine, would be discharged back to the Bay via an outfall operated by CMSA. Blending of brine with CMSA’s treated wastewater effluent would reduce the concentration of dissolved salts in the brine prior to its release into San Rafael Bay.

The MMWD desalination plant would be designed to minimize, as much as possible, adverse environmental impacts. Use of the existing CMSA outfall structure eliminates the environmental disturbance that would otherwise result if a subsea pipeline were established for this component.

2.1 PROJECT OBJECTIVES

The objectives of the proposed desalination project are to provide high-quality, reliable potable water to help balance water supply and demand in MMWD’s service area, including during emergencies and drought conditions, in a manner that is cost-effective, protects public health and safety, fulfills MMWD’s service commitments, and minimizes environmental and community impacts.

2.2 PROPOSED PROJECT

To maximize the ability of the existing water supply to meet water demand in MMWD’s service area, MMWD has several aggressive water conservation programs in place. In 1985 MMWD adopted water conservation standards that limited the amount of landscaping and the type of maintenance and irrigation systems used. In the years between 1994 and 2001, three key planning documents were completed: the *Water Conservation Baseline Study and Final Report* and the *Water Efficiency & Conservation Master Plan* in 1994, and the *Marin Municipal Water District Review of Conservation Activities Final Report* in 2001. In December 1991, MMWD was one of the original signatories of nearly 100 urban water agencies and environmental groups that signed an MOU committing their support to develop comprehensive water management programs. In 2005, MMWD adopted a water shortage contingency plan, included in the *Urban Water Management Plan 2005* (MMWD 2006a, updated 2007), which includes a dry year water use reduction program and mandatory rationing. The *Urban Water Management Plan* is incorporated by reference into this EIR and is available on MMWD’s Website (http://www.marinwater.org/documents/Item_12.x_2005_MMWD_UWMP_Adopted_11_07_Semi_Final.pdf). Most recently, in June of 2007, the MMWD Board of Directors adopted the *2007 Water Conservation Master Plan* with the basic goal of creating a “conservation trail map” for the district. In addition, MMWD is continuing its efforts to increase water conservation through its Integrated Water Resources Management Program. Further, MMWD is continuing to

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explore additional opportunities to partner on water recycling with the Las Gallinas Valley Sanitary District. Nevertheless, despite MMWD's aggressive water conservation efforts, future drought year water demand in MMWD's service area cannot be met without further increasing water supply.

A desalination plant is proposed that could ultimately supply up to 15 MGD. As currently envisioned, the project would be constructed in phases. The first phase would construct a 5 MGD facility. A 5 MGD facility would provide supplemental water supply, particularly during drought years, but would not completely balance projected supply and demand. In 2025, a continued imbalance of approximately 2,100 acre feet of demand is projected, compared to supply available, even with a 5 MGD facility. MMWD has a number of options to make up this shortfall, one of the most promising of which is conservation. In June 2007, MMWD adopted a Water Conservation Master Plan, which defines a roadmap for augmenting MMWD's existing conservation programs and forecasts demand reductions that could result from successful implementation of these programs. These conservation programs are analyzed in this document as a supplement and an alternative to a desalination facility. To address the imbalance in supply and demand, MMWD has proposed the construction of a 5 MGD desalination plant. The plant facilities would be oversized for possible expansion, which could increase plant capacity to a maximum of 15 MGD. At a future date, MMWD could determine that expansion phases were necessary if the water supply, in conjunction with MMWD's continued conservation efforts, was unable to fulfill MMWD's current or future service commitments.

In 2025, if additional conservation efforts are unsuccessful, the imbalance between water supply and demand could be as much as 6,700 AFY. This is more water than can be produced with a 5 MGD facility. As a result, it is possible that expansion of the desalination plant may be required in the future. MMWD will continue to pursue a number of other options to make up future shortfalls. One of the most promising of these options is conservation. Despite conservation efforts, it may be necessary to obtain additional water supplies. Expansion of the desalination plant would provide a potential source of such supplies. If expansion was necessary, the expansion would occur in increments of 5 MGD. Therefore, two expansion phases of 5 MGD are possible to reach the maximum facility capacity of 15 MGD.

Subsequent phases could add capacity to the facility for an ultimate capacity of 15 MGD. The desalination plant would take "raw water" or "feed water" from San Rafael Bay and subject it to various forms of treatment to produce drinkable (potable) water. Treatment would involve a "pretreatment" phase to remove solids from the raw water, then desalination using RO technology, followed by "post treatment" of desalted water to produce drinking water with taste and other characteristics comparable to that currently provided to MMWD's customers. The RO process would produce "permeate" or "product water" for drinking, and saline "concentrate" or "brine" that would be discharged back into San Rafael Bay. The desalination plant would be located on MMWD-owned land near Pelican Way in the City of San Rafael, California. Bay water would be piped from an intake at the end of a newly refurbished proposed rebuilt Marin Rod & Gun Club pier near the Richmond-San Rafael Bridge. Pretreatment of raw water to remove solids would generate sludge. This sludge would be hauled for disposal at Redwood Landfill in northern Marin County.

Implementation of the proposed project would include the following major process and construction components:

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- Raw water intake system
- Raw water pretreatment system
- Reverse osmosis system
- Post treatment and disinfection
- Brine disposal
- Plant site facilities and improvements
- Delivery of product water

2.3 PROJECT ALTERNATIVES

~~Seven~~Eight alternatives are analyzed in this EIR:

- **Alternative 1 – 10 MGD Expandable Desalination Plant:** This alternative would be similar to the proposed project except the first phase would be to construct a 10 MGD desalination plant with a subsequent phase that could increase capacity to 15 MGD. Increased conservation would not be required under this alternative.
- **Alternative 2 – Water Conservation:** This alternative involves further implementing existing conservation measures and creating additional conservation measures to reduce MMWD's projected water supply deficit.
- **Alternative 3 – 5 MGD Non-Expandable Desalination Plant with Conservation:** This alternative involves constructing and operating a 5 MGD desalination plant. All facilities and appurtenant structures (pipelines, tanks, pumps, etc.) would be sized for only a 5 MGD facility and the plant could not be expanded, as described for Alternative 1. In addition, this alternative would involve some form of increased conservation, as described for Alternative 2, to make up the shortfall of approximately 2,100 AFY of additional water needed to supply MMWD's estimated future needs during drought and to meet additional growth projected within the service area.
- **Alternative 4 – Alternate Pretreatment Method:** This alternative would contain all the same elements of the proposed project but instead of using microfiltration/ultrafiltration (MF/UF) pretreatment of the feed water, a conventional pretreatment system would be used.
- **Alternative 5 – Alternate Desalination Plant Site:** This alternative would contain all the same elements of the proposed project except that the desalination plant would be constructed at the San Quentin Ridge site rather than the Pelican Way site.
- **Alternative 6 – Alternate Intake Structure Site:** This alternative would contain all the same elements of the proposed project but instead of reconstructing the Marin Rod & Gun Club pier and constructing the intake structure on the pier, this alternative would construct a new intake in San Rafael Bay in the vicinity of the Pelican Way desalination plant site.
- **Alternative 7 – No Project Alternative:** Under the No Project Alternative, MMWD would take no actions to increase its water supply nor would it implement new water conservation programs beyond the initiatives now in place. The MMWD water supply would continue to be inadequate in drought situations. The MMWD goal of limiting episodes of water

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rationing to a frequency of no more than 1 year in 10 and at a mandatory water use reduction of no more than 25 percent from normal year levels would be unattainable. At some point, the frequency and depth of required water rationing would become so onerous that MMWD would have to place restrictions on the number of new water services and would have to seek modification to the normal year instream flow requirements contained in its water rights, to reserve available water in its local water supply facilities for existing customers and the local fisheries in times of drought.

- **Alternative 8 – Sonoma-Marin Transmission Line with Conservation:** In this alternative, MMWD would work with North Marin Water District (NMWD) to construct a new water transmission line from Petaluma to Novato. The line would replace and supplement an existing NMWD aqueduct, most of which would be relocated in the proposed expansion of U.S. Highway 101 (US 101). MMWD has an agreement with NMWD to use the existing pipeline for the conveyance of Russian River water that MMWD has purchased from SCWA. The pipeline capacity is inadequate to deliver NMWD’s Russian River water entitlement and accommodate MMWD’s full entitlement of up to 14,300 AFY. The new pipeline would have a capacity sufficient to enable the delivery of MMWD’s entitlement of Russian River water, assuming that SCWA can deliver the water. In addition, this alternative would implement the water conservation measures outlined in MMWD’s 2007 Water Conservation Master Plan.

2.4 INTENT AND SCOPE OF THE EIR

The intent of this EIR is to disclose the environmental impacts associated with the proposed project and alternatives.

2.5 ISSUES OF KNOWN CONTROVERSY

The primary issues of concern raised during the public scoping process are:

- Energy use
- Potential impacts to aquatic life from entrainment and/or impingement
- Effect to aquatic life and Bay water quality from disposal of brine
- Quality of drinking water produced by the desalination plant

An additional issue of concern raised during the public comment period on the Draft EIR was whether conservation and efficiency programs are viable alternatives to the proposed project.

2.6 IMPACT SUMMARY

Table 2-1 lists all impacts and mitigation measures addressed in this EIR. The table provides a summary of each impact, mitigation measures, and the impact’s significance after mitigation has been applied.

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**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Aesthetics	4.1-1 Development of the proposed project would not have an adverse effect on scenic vistas.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.1-2 Development of the proposed project would not substantially damage scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.1-3 Project development would degrade the visual character of San Quentin Ridge but would not degrade the visual character of other project areas.	<i>Prior to Mitigation:</i> Significant <i>Residual Significance:</i> Significant	Mitigation 4.1-3: During the project design phase, MMWD will work with a landscape architect and the cities of San Rafael and Larkspur to develop a landscaping plan for the San Quentin Ridge tank site to reduce the visual contrast of the tanks on the ridge top. MMWD will implement the landscaping plan during project construction. The landscape plan will identify the location and types of planting (i.e., trees and shrubs) that will soften the visual intrusion of the tanks and identify success metrics such as survival and growth rates for the plantings. <u>MMWD will place story poles at the tank locations upon completion of the site plans.</u>
	4.1-4 Project development could create substantial light or glare at the proposed desalination plant site, which could adversely affect daytime or nighttime views in the area.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.1-4(a): Design of the desalination plant will provide for the use of textured nonreflective exterior surfaces and nonreflective glass. Mitigation 4.1-4(b): All outdoor lighting will utilize directional lighting methods with shielded and cutoff-type light fixtures to minimize glare and upward directed lighting.
Air Quality	4.2-1 Construction activities would directly emit both fugitive dust and exhaust pollutants from diesel-fueled construction equipment <u>and construction workforce related traffic</u> . In addition, construction activities may cause indirect emissions associated with generation of electricity supplied for construction.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.2-1(a): Implement Bay Area Air Quality Management District (BAAQMD) Basic Control Measures, as described in the BAAQMD CEQA Guidelines, at all construction sites. Mitigation 4.2-1(b): Implement BAAQMD Enhanced Control Measures, as described in the BAAQMD CEQA Guidelines, at construction sites greater than 4 acres in area.
	4.2-2 Operation of the desalination plant would not have any direct emitting sources, with the exception of minor amounts of organic materials that may be used for maintenance and painting. The facility would also generate some vehicular traffic for employees, material deliveries, and sludge disposal.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

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Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Air Quality, cont.	4.2-3 Operation of the desalination plant would require electrical energy, which could indirectly increase emissions from fossil-fueled power plants.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.2-4 The proposed project would not create objectionable odors affecting a substantial number of people.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
Biological Resources	4.3-1 The project would not result in the loss of special-status plant species or species that may be added to the special-status plant list in the future.	<i>Prior to Mitigation:</i> No impact	No mitigation required
	4.3-2 The project could result in the failure of nesting efforts by protected nesting birds, including raptors such as the white-tailed kite, northern harrier, and loggerhead shrike; <u>California clapper rail that may be present in the Corte Madera Creek area</u> ; and nonlisted birds protected by the Migratory Bird Treaty Act.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.3-2: MMWD would conduct a pre-construction survey of trees and annual grassland on and adjacent to the pipeline route, tank sites and pumping stations during the breeding season not more than 14 days prior to the start of construction of any given segment. The surveys would be conducted by a qualified biologist to determine if any nesting bird would be affected. If an active raptor nest is discovered during pre-construction surveys, work exclusion buffers would be determined in consultation with the California Department of Fish and Game. If non-raptor protected bird species are observed nesting, clearing and construction within 150 feet would be postponed until the nest is vacated and juveniles have fledged, and there is no evidence of second nesting attempts. Nests located near existing roads would not require the 150-foot buffer zone.
	4.3-3 The project would result in the conversion of woodland and annual grassland to developed habitat <u>and the loss of individual trees</u> , which would result in the loss of general wildlife habitat for resident and migratory species, including foraging and/or nesting habitat for the pallid bat, Townsend's big-eared bat, short-eared owl, loggerhead shrike, northern harrier, white-tailed kite, peregrine falcon, and ferruginous hawk.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.3-3: Prior to final design and construction of project features, MMWD would perform a tree survey of the San Quentin Ridge woodland and other wooded areas along pipeline routes. The project design would be modified to avoid trees greater than 6 inches diameter at breast height (DBH), if feasible. If the project cannot avoid a tree greater than 6 inches DBH, replacement trees (predominantly native species that are not disease-prone <u>similar to those removed</u>) would be planted at a 2:1 ratio, and a management plan would be established <u>developed</u> with Marin County <u>and/or the City of San Rafael</u> , designating preservation areas of the woodland.

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Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Biological Resources, cont.	4.3-4 The project would not result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.3-5 The proposed project would not result in the loss or adverse modification of natural wetlands or other waters of the U.S. that fall under the jurisdiction of the U.S. Army Corp of Engineers and/or California Department of Fish and Game. <u>Rehabilitation of the Marin Rod & Gun Club pier and construction of the intake structure would occur within Other Waters of the United States (San Francisco Bay).</u>	<i>Prior to Mitigation:</i> Less than significant No impact	No mitigation required
	4.3-6 The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or disrupt established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.3-7 The project could result in the removal of protected trees on an unimproved parcel, trees on an improved parcel, or trees removed as a condition of approval. Each of these categories is recognized as protected under Marin County Ordinance 3342.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.3-7: Mitigation 4.3-3 outlines mitigation measures in accordance with Marin County Ordinance 3342.
	4.3-8 Installation of new concrete piles would result in the loss of soft-bottomed Bay habitat.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

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Biological Resources, cont.	4.3-9 Underwater pile-driving noise during reconstruction of the Marine Rod & Gun Club pier could affect fish and marine mammals.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.3-9(a): The National Oceanographic and Atmospheric Administration’s National Marine Fisheries Service (NOAA Fisheries) would be consulted regarding appropriate measures to mitigate potential effects on fish, including special-status species (chinook salmon, steelhead, and green sturgeon). Such measures normally include specifying allowable seasonal work windows for in-water pile driving and use of physical attenuators such as air bubble curtains. During initial pile-driving efforts, the area around the in-water pile-driving activities will be monitored for signs that fish are being injured. 4.3-9(b): For marine mammals, an Incidental Harassment Authorization from NOAA Fisheries may be required for pile-driving activities. Pre-construction surveys will be conducted to determine use of the area by marine mammals before pile driving begins. Marine mammal monitoring will be conducted during construction in conjunction with underwater noise monitoring. The avoidance measures would include the establishment of a “safe zone” based on the initial measurements of where the 160 dB contour occurs. Pile-driving activities will not commence until marine mammals are not sighted within the safety zone for approximately 15 to 30 minutes.
	4.3-10 Discharge of brine to San Francisco Bay could result in local mortality or degradation of biological communities that surround the outfall. However, brine dilution modeling indicates that the discharge would be rapidly mixed and equal to ambient conditions within a few feet of the diffuser.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.3-11 Intake of water from San Rafael Bay would result in the entrainment of fish larvae and other ichthyoplankton. Entrainment studies showed that the entrainment of larval fish and eggs would not result in effects to fish populations.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

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Biological Resources, cont.	4.3-12 Intake of water from San Rafael Bay would result in the impingement of adult and juvenile fish into the intake screens. The intake screen would be designed to resource agency standards to minimize impingement effects.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.3-13 The project would not conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other applicable HCP.	<i>Prior to Mitigation:</i> No impact	No mitigation required
Cultural Resources	4.4-1 Construction of the in-system pipelines could cause a substantial adverse change in the significance of known potentially unique archaeological resources as the result of ground disturbance associated with project development.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	<p>Mitigation 4.4-1(a): Route the pipeline (Reach 1) along the easternmost edge/curb of the concrete access road adjacent to the mapped location of the intact remnant of CA-MRN-80. This would keep the project out of the demonstrated location of the deposit.</p> <p>4.4-1(b): Require full-time archaeological monitors to be present during the cut and removal of the concrete road within 75 feet in either direction from the plotted location of CA-MRN-80, as well as intermittent monitoring at this location during trenching at the professional discretion of a professional archaeologist. Implement Mitigation 4.4-2(b) and 4.4-2(c) if a discovery occurs.</p> <p>4.4-1(c): Require a full-time archaeological monitor to be present during the removal of the aggregate roadbed (beneath the pavement) within 75 feet in either direction from the plotted location of CA-MRN-86 and CA-MRN-129, as well as intermittent monitoring at this location during trenching activities at the discretion of a professional archaeologist. Implement Mitigation 4.4-2(b) and 4.4-2(c) if a discovery occurs.</p> <p>4.4-1(d): <u>If ground-disturbing activities are necessary within Caltrans right-of-way, a Cultural Resources Study will be required prior to obtaining an encroachment permit from Caltrans that evaluates the potential for buried unrecorded sites within the area impacted by activities. If an archaeological site is identified within Caltrans right-of-way, the following will be submitted to Caltrans as part of MMWD's application for an encroachment permit: 1) effect evaluation of potential project impacts to the archeological site; 2) mitigation plan per CEQA Guidelines 15126.4(b)(3) including implementation of Mitigation Measure 4.4-1(b)-(c); and 3) evidence of consultation with the territorial Native American group(s) for the area pursuant to Section 5097 of the California Public Resources Code. Any archaeological site identified will be avoided to the extent feasible. If a historically or culturally significant resource cannot be avoided, MMWD will implement a Data Recovery Plan approved by Caltrans.</u></p>

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Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
<p>Cultural Resources, cont.</p>	<p>4.4-2 Construction activities associated with the project could cause a substantial adverse change in the significance of an unknown unique archaeological resource, as defined in CEQA Guidelines Section 15064.5, as the result of an inadvertent discovery in the course of ground disturbance, associated with project development.</p>	<p><i>Prior to Mitigation:</i> Potentially significant</p> <p><i>Residual Significance:</i> Less than significant</p>	<p>Mitigation 4.4-2(a): Contractor crews will be required to attend an informal training session prior to the start of earth moving, regarding how to recognize archaeological sites and artifacts. Prior to disturbing the soil, contractors will be notified that they are required to watch for potential archaeological sites and artifacts and to notify the MMWD immediately if any are found. In the event of a find, MMWD will implement Mitigation 4.4-2(b), below.</p> <p>Mitigation 4.4-2(b): If an archaeological deposit is encountered, immediately halt all digging within 100 feet of the find, and have a professional qualified archaeologist assess the integrity and significance of the deposit. Further testing to establish the significance of impacts and/or mitigation of significant impacts would be developed in consultation between MMWD and the professional archaeologist.</p> <p>Mitigation 4.4-2(c): In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps would be taken: (1) There will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until: (a) The coroner of the County must be contacted to determine that no investigation of the cause of death is required; and (b) If the coroner determines the remains to be Native American: (i) The coroner will contact the Native American Heritage Commission within 24 hours. (ii) The Native American Heritage Commission will identify the person or persons it believes to be the most likely descended from the deceased Native American. (iii) The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in California Public Resources Code Section 5097.98, or (2) Where the following conditions occur, the landowner or his authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance. (a) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission; (b) The descendent identified fails to make a recommendation; or (c) The landowner or his authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.</p>

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Cultural Resources, cont.	4.4-2, cont.		Section 8100 of the California Health and Safety Code provides that six or more human bodies buried at one place constitute a cemetery. Section 7052 makes it a felony for anyone found guilty of mutilating or removing any human remains from a cemetery without authority of law. Section 7050.0 makes it a misdemeanor for anyone who disturbs, mutilates or removes human remains from any location other than a cemetery. This circumstance applies most often to archaeological investigations but would also apply to remains found during maintenance activities. It requires any person to stop disturbing ground in the vicinity of discovered human remains and to call the county coroner.
	4.4-3 Construction activities associated with the project could cause a substantial adverse change in the significance of a historic resource (the Northwestern Pacific Railroad Historic District), as defined in CEQA Guidelines Section 15064.5, as the result of ground disturbance associated with project development.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.4-3: Avoid all direct impacts to the Northwestern Pacific Railroad tracks, berm, or any associated contributing elements. Route the pipeline away from the tracks, and where crossings are necessary, use directional boring under the feature.
	4.4-4 Construction activities associated with the project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	<i>Prior to Mitigation:</i> No impact	No mitigation required
Geology	4.5-1 New facilities could be exposed to surface fault rupture. However, no proposed facilities would be located within the Alquist-Priolo zone. Therefore, the potential for surface faulting is negligible.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.5-2 Proposed new facilities could be exposed to strong ground shaking. Performance of site-specific ground motion calculations and adherence to current building codes and design standards would ensure that structures withstand strong seismic shaking without loss of life.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.5-3 The proposed desalination plant site is in an area of potentially liquefiable soils. Any liquefiable soils would be removed or engineered, or deep pile foundations would be properly designed and constructed for proposed facilities at the desalination plant site.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

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Geology, cont.	4.5-4 Subsidence is ongoing in portions of the Bay Area. A potential geohazard could result from subsidence to facilities proposed at the desalination plant site. Facilities proposed to be located on areas of compressible or weak soils would be constructed on deep-pile foundations.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.5-5 Expansive soils occur within the project area. Expansive soil behavior is associated with wetting and drying of soils containing mixed-layer clays. Expansive soils can lead to structural damage. Expansive soils under proposed facilities would be removed and replaced with non-expansive fill.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.5-6 Potential slope movements in the project area could cause a range of impacts from minor structural damage (building impacts from rock fall) to major damage and injury/loss of life from building collapse. Proposed facilities would be located away from steep, unstable slopes or the site would be engineered to reduce slope hazards.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.5-7 Exposure of native and engineered soils during construction activities could make them particularly prone to erosion due to rainfall runoff (even on gentle and moderate slopes) and stream bank erosion.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.5-7: Areas of grading and other construction activity should be designed to minimize runoff. The use of temporary controlled drainage measures, including straw rolls, visquene covering and silt fences should minimize erosion and runoff during construction. Properly designed and implemented drainage and revegetation plans would minimize post-construction erosion.
Hazards and Hazardous Materials	4.6-1 The project would result in routine transport, use and storage of hazardous materials through operation, maintenance and support activities, which would not create significant hazards to the public or the environment. Chemicals that would be handled at the facility are typical of those used routinely at water treatment facilities and include coagulant, antiscalant, sodium bisulfate, carbon dioxide, limestone/calcite, zinc orthophosphate, sodium hypochlorite, ammonia, sodium hydroxide, fluoride, and citric acid.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

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Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Hazards and Hazardous Materials, cont.	4.6-2 Plant operations potentially could result in the accidental spill of hazardous materials transported to or stored on-site.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.6-3 Excavation of soils for construction of project features (e.g., underground pipelines) could potentially cause health hazards to construction workers and the public should contamination be encountered.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.6-3: During all project excavation activities, the contractor will inspect the exposed soil for visual evidence of contamination, particularly near sites identified during the database search (Table 4.6-1). If visual contamination indicators are observed during excavation or grading activities, all work will stop and an investigation will be designed and performed to verify the presence and extent of contamination at the site. Results will be reviewed and approved by the appropriate County's Environmental Health Division or the Department of Toxic Substances Control prior to construction. The investigation will include collecting samples for laboratory analysis and quantifying contaminant levels within the proposed excavation and surface disturbance areas. Subsurface investigation will determine the appropriate worker protection and the hazardous material handling and disposal procedures appropriate for the subject site. Areas with contaminated soil and groundwater determined to be hazardous waste will be removed by personnel who have been trained through the Occupational Health and Safety Administration - recommended 40-hour safety program (29 Code of Federal Regulations Section 1910.120) with an approved plan for groundwater extractions, soil excavation, control of contaminant releases to the air, and off-site transport or on-site treatment. A health and safety plan, prepared by a qualified and approved industrial hygienist, will be used to protect the general public and all workers in the construction area. In addition, any soils that must be excavated and removed for off-site disposal will be tested to determine if the soil is contaminated and if special handling is required.
	4.6-4 Certain project components would be in areas potentially subject to wildland fires.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Hydrology and Water Quality	4.7-1 Construction activities associated with implementation of the proposed project would not contribute substantial loads of sediment or other pollutants in storm water runoff that could degrade receiving water quality.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-2 Construction activities associated with implementation of the proposed project could temporarily disturb bottom sediments in the Bay, increasing turbidity.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-3 Development of the proposed project would increase the amount of impervious surface on the proposed project site and could alter drainage patterns, thereby increasing runoff and potentially increasing loads of pollutants in storm water, which could affect water quality.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-4 Implementation of the proposed project could alter drainage patterns in the project area and increase impervious surfaces, which would not exceed the capacity of storm water drainage systems and result in localized flooding and contribution to off-site flooding.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-5 Discharge of brine through the Central Marin Sanitation Agency's outfall into San Rafael Bay could affect the water quality of the Bay.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-6 Liquid wastes, sanitary wastes and process area washdown wastes would be discharged to the sanitary sewer system for treatment and ultimate disposal to the Bay, which would not exceed waste discharge requirements and degrade receiving water quality.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.7-7 The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding.	<i>Prior to Mitigation:</i> No impact	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Hydrology and Water Quality, cont.	4.7-8 Tsunami- and seiche-generated waves have the potential to inundate the shoreline and damage the desalination facilities.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.7-8: The impacts of future tsunamis can be lessened or mitigated completely by the application of appropriate engineering design. Detailed hydrodynamic modeling may be necessary for coastal locations in order to determine the likely extent of potential inundation. The behavior of tsunami waves is dependent on local bathymetry. Optimal siting and design of shoreline facilities would lessen the impact of incoming waves. MMWD would design and construct the facility to minimize the risk of damage from a tsunami or seiche-generated wave.
	4.7-9 Introduction of a new water supply source could affect the water quality of the domestic water supply.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
Land Use and Planning	4.8-1 The proposed Ridgecrest A tank site is not consistent with the land use designation of Open Space at that location.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.8-1: MMWD will work with the Marin County Open Space District <u>and the Town of Tiburon</u> to identify the location and amount of lands (minimum mitigation ratio of 1:1) that can be purchased or MMWD-owned land that can be traded to offset the loss of this open space land. Preferably the land would be contiguous to other existing open space managed by the Marin County Open Space District <u>and located on the Tiburon Peninsula</u> . MMWD will then execute the agreed-upon exchange.
	4.8-2 Rebuilding the Marin Rod & Gun Club pier would not conflict with the goals and policies set forth in the Bay Conservation and Development Commission's Bay Plan.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.8-3 Construction of pipelines on existing roadways would cause temporary traffic impacts that may limit emergency vehicle access, which is inconsistent with goal and policies of relevant general plans.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
Noise	4.9-1 The proposed project is located in a noise environment that is compatible with its use.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.9-2 Operation of the proposed desalination plant would result in an increase in noise levels surrounding the location. However, noise levels would not exceed the 'normally acceptable' noise level limit of 65 dBA L _{dn} for industrial noise sources adjacent to commercial use areas. Operation of the proposed project would not result in excessive groundborne vibration.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Noise, cont.	4.9-3 Project construction would temporarily increase ambient noise levels during the construction period.	<p><i>Prior to Mitigation:</i> Significant</p> <p><i>Residual Significance:</i> Significant</p>	<p>Mitigation 4.9-3(a): Limit construction to daytime hours (8:00 a.m. to 5:00 p.m.) Monday through Friday (<u>except construction of the pipeline across Second Street, which would occur at night to comply with the City of San Rafael's roadway construction policies, and when the effects of construction on congestion would be minimal</u>). No construction activities within 500 feet of residences should occur on Saturdays, Sundays, or holidays.</p> <p>4.9-3(b): All powered construction equipment will be equipped with intake and exhaust mufflers recommended by the manufacturers thereof.</p> <p>4.9-3(c): Locate all stationary noise-generating construction equipment, such as air compressors and portable power generators, as far as practical from existing noise-sensitive receptors.</p> <p>4.9-3(d): Foundation pile holes should be pre-drilled where possible to reduce the number of impacts required to seat the pile. Consider using multiple pile drivers to reduce the number of days of pile-driving activity. Use of multiple pile drivers would slightly increase noise levels during construction but would reduce the construction duration.</p> <p>4.9-3(e): Notify active land uses within 500 feet of pile driving activities of construction schedule.</p> <p>4.9-3(f): Designate a noise disturbance coordinator who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. Conspicuously post the construction schedule and telephone number for the disturbance coordinator at the construction site.</p>
Population and Housing	4.10-1 Implementation of the proposed desalination project would not directly induce substantial population growth in the area. However, the proposed project would remove an obstacle to growth. Therefore the proposed project would indirectly contribute to growth in the service area.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.10-2 Implementation of the desalination project would not displace people or existing housing	<i>Prior to Mitigation:</i> No impact	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Public Services and Utilities	4.11-1 Implementation of the proposed desalination project would not result in significant environmental impacts associated with the provision of new or altered facilities for law enforcement services in order to maintain each department's applicable service objective.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.11-2 Implementation of the proposed desalination project would not result in significant environmental impacts associated with the provision of new or altered fire department facilities to maintain each department's response standard.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.11-3 Implementation of the proposed desalination project would require increased discharges through the Central Marin Sanitation Agency's wastewater effluent outfall, which would not result in significant environmental impacts.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.11-4 Implementation of the proposed project would require the expansion of storm drainage conveyance, which would not result in significant environmental impacts. MMWD would ensure that facilities for adequate storm water drainage are included in the project design.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.11-5 Implementation of the proposed project would increase the volume of municipal solid waste that would require disposal, but would not require an expansion of any area landfills.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.11-6 Implementation of the proposed desalination project would require the expansion of the electrical system, which would not result in significant adverse environmental impacts.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
Recreation	4.12-1 Implementation of the proposed desalination project would result a change in visual resources from the portion of the Bay Trail in Shoreline Park, adjacent to the proposed plant site and intake structure.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Recreation, cont.	4.12-2 Implementation of the proposed desalination project would result a change in noise levels from the portion of the Bay Trail in Shoreline Park, adjacent to the proposed plant site and intake structure.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.12-3 Implementation of the proposed desalination project would result in a loss of approximately 2 acres of open space land in southern Marin County due to construction of a water storage tank.	<i>Prior to Mitigation:</i> Potentially significant <i>Residual Significance:</i> Less than significant	Mitigation 4.12-3: As indicated in Mitigation Measure 4.8-1, MMWD will work with the Marin County Open Space District to identify the location and amount of lands (minimum mitigation ratio of 1:1) that can be purchased or MMWD-owned land that can be traded to offset the loss of this open space land. Preferably the land would be contiguous to other existing open space managed by the Marin County Open Space District. MMWD will then execute the agreed-upon exchange.
	4.12-4 Construction of the proposed desalination project could intermittently and temporarily disrupt existing nearby recreational facilities for the duration of construction.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
Traffic, Parking and Transportation	4.13-1 Implementation of the proposed project would not cause an increase in the traffic that may be substantial in relation to the existing roadway capacity of the street system as indicated by a substantial increase in the number of vehicle trips.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.13-2 The proposed project would not cause a level of service standard established by the Marin County 2003 Congestion Management Plan for designated roads or highways to be exceeded.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.13-3 Implementation of the proposed project would not substantially increase hazards due to design features or incompatible uses.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.13-4 Implementation of the proposed project would result in reduced emergency access on some local roadways during construction.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required
	4.13-5 Implementation of the proposed project would not result in inadequate parking capacity.	<i>Prior to Mitigation:</i> Less than significant	No mitigation required

2.0 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1
Impacts and Mitigation Measures**

Resource Area	Potential Impact	Significance Before Mitigation/ Residual Significance	Mitigation
Traffic, Parking and Transportation, cont.	4.13-6 Implementation of the proposed project would conflict with applicable adopted policies, plans, or programs supporting alternative transportation.	<p><i>Prior to Mitigation:</i> Potentially significant</p> <p><u><i>Residual Significance:</i></u> <u>Less than significant</u></p>	Mitigation 4.13-6: MMWD would coordinate at least 30 days in advance with public transit agencies to avoid disruption to transit operations. Public agencies that operate bus routes on the roadways potentially affected by the proposed construction activities would be informed in advance of the pipeline project and the potential impacts at bus stop locations. Alternative pickup/dropoff locations will be determined and signed appropriately.

