CHAPTER 4
Cumulative Impacts

4.1 CEQA Analysis Requirements

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require the analysis of cumulative impacts. A cumulative impact is created as a result of the combination of the project evaluated in the EIR/EIS together with other projects causing related impacts. NEPA and the Council on Environmental Quality (CEQ) regulations require an assessment of cumulative impacts, in addition to the evaluation of direct impacts (40 C.F.R § 1508.7, 1508.25). CEQ regulations implementing NEPA define a cumulative impact as:

> ". . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The *CEQA Guidelines* require that EIRs discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects.[1] The purpose of this analysis is to disclose significant cumulative impacts resulting from the North Bay Water Recycling Program (NBWRP) in combination with other projects or conditions, and to indicate the severity of the impacts and the likelihood of occurrence (CEQA Guidelines Sections 15130 (a) and (b)). The *CEQA Guidelines* indicate that the discussion of cumulative impacts should include:

(1) Either: (A), a list of past, present, and probable future projects producing related or cumulative impacts; or (B), a summary of projections contained in an adopted general plan or similar document, or in an adopted or certified environmental document, which described or evaluated conditions contributing to a cumulative impact;

(2) A discussion of the geographic scope of the area affected by the cumulative effect;

(3) A summary of expected environmental effects to be produced by these projects; and,

(4) Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

[1] CEQA *Guidelines* Section 15130, 15065, as amended January 1, 2000.

The analysis of cumulative effects in this chapter focuses on the effects of concurrent implementation of the proposed NBWRP with other spatially and temporally proximate projects. As such this analysis will rely on a list of projects that have the potential to contribute to potential cumulative impacts in the project area. The Impacts and Mitigation Measures section defines significance criteria used for the impact assessment and presents a discussion of potential project-related impacts. Determination of significance of impacts in this EIR/EIS apply only to CEQA, not to NEPA.

4.2 Related Projects

4.2.1 Geographic Scope

The potential for project-generated impacts to contribute to a significant cumulative impact would arise if they are located within the same geographic area. This geographic area may vary, depending upon the issue area discussed and the geographic extent of the potential impact. For example the geographic area associated with construction noise impacts would be limited to areas directly affected by construction noise, whereas the geographic area that could be affected by construction-related air emissions may include a larger area. In general, impacts associated with the implementation of the NBWRP are limited to short-term construction impacts. Long-term impacts are limited to beneficial impacts to water supply and energy use associated with recycled water treatment and distribution.

Construction impacts associated with aesthetics, increased noise, dust, erosion, and access limitations tend to be localized and could be exacerbated if other development or improvement projects are occurring within the vicinity of proposed facilities. The geographic scope may vary for each issue area depending on the nature of the cumulative impacts. When considered cumulatively with other projects that may occur in the same geographic vicinity, the scope of analysis is defined by the physical boundaries for each issue area. Therefore, cumulative impacts to water quality would occur within the watershed. For this cumulative analysis, the two geographic boundaries that capture the majority of these impacts are the North San Pablo Bay watershed and the Bay Area Air Basin. Where appropriate, other jurisdictional boundaries are applied for individual issue area analysis.

4.2.2 Project Timing

In addition to the geographic scope, cumulative impacts are determined by timing of the other projects relative to the proposed project. Schedule is particularly important for construction related impacts: for a group of projects to generate cumulative construction impacts, they must be temporally as well as spatially proximate. The projects described in **Sections 4.2.3** and **4.2.4** are likely to fluctuate due to schedule changes of other unknown factors, this analysis assumes these projects would be implemented concurrently with implementation of the NBWRP.

4.2.3 Relationship to Water Supply Projects Occurring Outside of the North San Pablo Bay Watershed

As noted throughout this EIR/EIS, water supply within the North San Pablo Bay watershed is provided by three primary sources: water supply imported from outside of the watershed, local surface water diverted within the watershed, and groundwater. Imported supplies include supplies imported from the Russian River (including a portion diverted from the Eel River watershed by PG&E's Potter Valley Project) and distributed within Sonoma and Marin Counties by Sonoma County Water Agency (SCWA), and supplies imported from the Sacramento-San Joaquin Delta and delivered to Napa County by the Department of Water Resources. A number of projects that have potential to affect the amount, timing, availability, quality, and management of imported water supplies have or will be proposed, and may be implemented outside of the North San Pablo Bay Watershed.

The objectives of the NBWRP are identified in **Chapter 2, Project Description**. NBWRP would recover[2] wastewater that is currently discharged to North San Pablo Bay, and reuse that water for urban and agricultural irrigation in order to offset the use of potable supplies for this purpose. The level of potential potable offset is identified in **Section 3.2, Groundwater, Section 3.4 Water Quality, and Section 3.11, Public Utilities**. The NBWRP's only contribution to impacts related to the provision of imported surface water supplies is beneficial, as the provision of recycled water would offset use of potable supplies for irrigation.

4.2.4 Type of Projects Considered

As described in **Chapter 3.0** of this EIR/EIS, the majority of impacts associated with implementation of the proposed NBWRP are short-term impacts related to construction of the proposed facilities, rather than long-term project operation. Therefore, cumulative effects will primarily result from potential combined impacts of other construction projects in Sonoma, Napa, and Marin Counties. For this analysis, other past, present, and reasonably-foreseeable future construction projects, particularly other infrastructure projects, in the area have been identified.

Table 4-1 lists recent, current, and proposed projects that, along with implementation of the NBWRP, could potentially contribute to cumulative impacts within the project area. A brief overview of large capital improvement projects planned by public agencies is provided below. In addition to these specific projects, it is recognized that additional construction development will occur within the project area and may contribute to cumulative construction impacts. Such planned and approved development, as listed in Table 4-1, is in accordance with the General

[2] It should be noted that the recovery of recycled water occurs only after the use of potable water, generation of wastewater through municipal, commercial, and industrial and irrigation uses, and the subsequent treatment of that wastewater to levels appropriate for release to the environment as treated effluent, consistent with NPDES permit requirements. Recovery of treated effluent prior to discharge, and reuse of that effluent for irrigation purposes, would not increase or alter the amount, rate, or distribution of water imported into the area to support existing and future water demands under the approved General Plans within the NBWRP area. Rather, it would offset the use of potable supplies for irrigation. A full discussion of current and projected water demands within the areas served by the NBWRP, based upon approved General Plans within the region, is provided in **Chapter 5, Growth Inducement and Secondary Effects of Growth**. The NBWRP's contribution to the provision of water supplies within the region is also discussed.

TABLE 4-1
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
CURRENT AND ONGOING PROJECTS			
	Marin County Projects		
Caltrans	Culvert Replacement and rock slope installation	Route 1 near Marshall, 1.5 miles south of Marshall Petaluma Road	Undefined
	Marin 101 High Occupancy Vehicle (HOV)Project	San Rafael	Under Construction, Estimated Completion Fall 2009
	Rock slope installation and drainage repair	Highway 1 near Tamalpais-Homestead Valley at 2.2 miles north of Muir Beach Overlook	Undefined
	Rock slope protection installation	Near San Rafael, 0.1 miles north of Sir Francis Drake Boulevard.	Undefined
	Slope and drainage repair	Route 101 in Sausalito, north of Rodeo Drive	Undefined
	Replace failed drainage	San Rafael from Miller Creek Road to Lucas Valley Road	Undefined
	Novato Creek Bridge Levee Reconstruction	Novato	Undefined
Marin County Department of Public Works	Cal-Park Tunnel	Conversion of 1,100 foot long tunnel paralleling Hwy 101 from San Rafael to Larkspur into pedestrian/ cycling path	Under Construction; Completion Scheduled for 2010
Marin County Flood control and Water Conservation District	Improvements in Novato Flood Zone 1	Portion of Vineyard Creek, upstream of Center Road to downstream of McClay Avenue	
	City of San Rafael		
City of San Rafael Public Works, Capital Improvements Projects	Intersection Improvements	Medway Street from Francisco Boulevard East to Canal, San Rafael	Under Construction
	4th Street Rehabilitation and West End Village	4th Street from D Street to 2nd Street, San Rafael	Under Construction
	City Plaza Improvements	4th and Court Streets, San Rafael	Under Construction
	Bicycle Pedestrian Master Plan Update	City of San Rafael	ND 2008
	Fifth Avenue Signal Upgrade	Fifth Avenue, Downtown San Rafael	January through March 2009
City of San Rafael Planning Division	San Rafael Corporate Center	City of San Rafael	Under Construction
	Northgate Mall Renovation	City of San Rafael	Under Construction
	Chrysler/ Jeep/ Dodge Dealership; VW/ Audi and Nissan Dealership; Smart Car Dealership	City of San Rafael	Under Construction
Marin Municipal Water District	Desalination Project	City of San Rafael	FEIR December 2008
	Recreation Facility at San Rafael Airport	City of San Rafael	Under Construction
	Target	Shoreline Center, City of San Rafael	Planning; DEIR September 2008
	Marin County Health Campus	City of San Rafael	Under Construction
	Mt. Tamalpais Cemetery	City of San Rafael	Design

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	City of San Rafael (cont.)		
Marin Municipal Water District	Village at Loch Lomond Marina	City of San Rafael	Planning
	Condos at San Pablo Avenue	City of San Rafael	Under Construction
	Mixed used residential	Tamalpais and 3rd Street, San Rafael	Design
	Subdivision	Emma Court	Application
	City of Novato		
City of Novato Department of Public Works Capital Improvement Projects	Storm Drain Master Plan	City of Novato	Completion scheduled 2009-2010
	Municipal Building Renovation	901 Sherman Avenue, City of Novato	Construction in 2008 scheduled for completion Summer 2009
	Neighborhood Projects	City of Novato	Continuing; dependent on scope and type of project
	Hamilton Pool/ Gymnasium Renovation	City of Novato	Design Phase 2008-2009; Pool construction 2009, reopening 2010; Gymnasium completion scheduled for 2012
	Commuter Bike Connection	Westerly side of Highway 101, Enfrente Rod to South Novato Blvd	Construction Spring/Summer 2009; Estimated completion Fall 2009
	Hamilton Wetlands Access	Feasibility study for alternate access road from Hamilton Parkway to the Wetlands Restoration Project area	Feasibility Study began in Winter 2006-2007; Environmental review completed summer 2008; Construction schedule pending
	Road Improvements to address walkway, bikeway, and drainage issues	Indian Valley Road; Hill Road	2009-2010
	Roadway Improvements to address safety and traffic congestion	Novato Blvd. between Diablo Avenue and Grant Avenue	NEPA/ CEQA Environmental Review scheduled for completion early 2009; Construction 2011-2012
	Roadway Improvements	Rowland Blvd between Redwood Blvd. and Vintage Way	Construction 2012
	Phase III Roadway Improvements	Olive Avenue between Redwood Blvd. and Railroad Avenue	Construction during Spring/Summer 2009
	Street Improvements	Mill Road.	Construction period 2008-2009
	Drainage Improvements	Rush Creek, City of Novato	Construction schedule dependent on funding

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Sonoma County		
Caltrans District 4	Highway 101 Widening Project	Continuous HOV lane extension from Southern Marin County to Windsor, Sonoma County; Wilfred Avenue to Highway 12; Highway 12 to Steele Lane, Rohnert Park Expressway to Wilfred avenue, Steele Lane to Windsor River Road, Old Redwood Highway in Petaluma to Rohnert Park Expressway.	Construction 2007-2009
	Marin Sonoma Narrows Project	Extends 26 miles from South of Route 37 interchange in Novato to Corona Road Overcrossing in Petaluma	EIR 2007; Ongoing construction and environmental review; Estimated completion 2011
	Santa Rosa HOV Widening	Route 12 from S. Santa Rosa Overhead to the Route 12/101 Separation and on Route 101 from Earle Street Pedestrian Overcrossing to Steele Lane	2008-mid 2010 (3 phases over a 2.5 year period)
Sonoma County Transportation and Public Works Department	Geyserville Park & Ride Visitor Plaza	Sonoma County	Under Construction
	Road Improvements- State Route (SR) 12 Corridor Improvement Project Phase II, Stage 1; Sidewalk Project	SR 12	October 2008 to June 2009
	River Road Channelization and River Access Project	Sunset Beach, Sonoma County	Under Construction
	Central Landfill Leachate and Compressed Landfill Gas Pipeline Project	Rohnert Park Expressway and Stony Point Road, Sonoma County	Under Construction
	Central Landfill Site - East Canyon Expansion Phase IV	Sonoma County	Permits Pending
	Signalization and widening	Adobe Road and East Washington Street, Petaluma	2009
	Slide Repair (Federal Aid Project)	River Road, Sonoma County	Under Construction
Sonoma County Permit and Resource Management Department	Draft Grading, Drainage, Vineyard-Orchard Ordinance	Sonoma County	Hearing on October 21, 2008
	Roblar Road Improvements	Roblar Road, southern Sonoma County, approximately five miles west of the City of Cotati	Planning Commission Approval Pending
	Blue Rock Quarry	Highway 116 approximately one mile west of Forestville in Sonoma County	Final EIR (FEIR), Planning Commission Approval Pending
	Dutra Asphalt and Recycling Facility	southwestern unincorporated Sonoma County, directly south of Petaluma, along the Petaluma River	Environmental Review period; Planning Commission Approval Pending
	Housing Element Update 2009	Sonoma County	Ongoing
	Penngrove Design Guidelines	Penngrove Mainstreet	Draft
	Preservation Ranch Project	19,652-acre1 property in northwestern Sonoma County	Environmental Review/ Application Pending

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Sonoma County (cont.)		
Sonoma County Water Agency	Russian River Instream Flow and Restoration	Russian River Watershed, Jenner	DEIR 2013
	North Sonoma County Agricultural Reuse Project	Northern Sonoma County	FEIR 2009
	Russian River County Sanitation District Equalization Basin Storage Project	Russian River Wastewater Treatment Plant, Guerneville, Russian river Watershed	FEIR March 2009
	Sea Ranch Sanitation Zone Wastewater Treatment, Storage and Disposal Modifications Project	Sea Ranch Community, Sonoma County	DEIR
	Sonoma Valley County Service District Trunk Line Project	Sonoma, Schellville	Construction 2009
	Water Supply, Transmission, and Reliability Project	Sonoma County; Lake Sonoma, along Dry Creek downstream of Lake Sonoma/Warm Springs Dam, and along the mainstem of the Russian River downstream of the confluence with Dry Creek	DEIR 2009
	Sewer Lateral Ordinance	All Sanitation Districts within Sonoma County	Proposed 2009
	City of Sonoma		
	No Current Projects		
	Napa County		
Caltrans (SHOPP)	Tulucay Bridge #21-0003 Replacement	Route 121 in Napa	Undefined
	Sarco Creek Bridge #2-0008 Replacement	Route 121 near Napa	Undefined
	Cappell Creek Bridge #21-0009 Replacement	Route 121 near Napa	Undefined
	1.7 miles of Road Improvements (Contract No. 444214)	121 in Napa County from Duhig Road to the Sonoma Napa County line	Construction from February 2009 to December 2009
	Inlet and Drain Installation	Route 128 near St. Helena, east of Lake Hennessey	
	Horizontal Drain Installation	Route 128 near Lake Berryessa, 1.1 miles south of Knoxville Road	
Napa County Public Works	Airport Glideslope	Napa County Airport	Planning
	Duhig Bike Path	Bike lanes will begin at intersection of Duhig Road and Las Amigas and run south for approximately 2,500 feet; terminate at Huichica Creek bridge	Planning (as of 3/25/2009)
	Oak Knoll/ Oakville Crossroad	Oak Knoll to Oakville Crossroad reach of the Napa River, continuation of Rutherford Dust Project	Planning, 2010 Implementation
	Underground Storage Tank Cleanup	Napa County Airport	Planning
	Whitehall Lane Washout Repair	Whitehall Lane, Napa	Planning
	White Sulfur Springs Road	White Sulphur Springs Road, St. Helena	Planning

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Napa County (cont.)		
Napa County Public Works (cont.)	General Aviation Apron Rehabilitation	Napa County Airport	Planning
	Dry Creek Road slide Repair	Dry Creek Road, Napa	Planning
	Napa County Airport	Napa County Airport	Planning/ Environmental Assessment
	Oakville Crossroad Bridge Replacement	Oakville Crossroad near Route 29, south of Lake Berryessa	Design
	Rule 20 A Underground Utilities	State Route 29, Galleron Lane to Dowdell Lane, St. Helena and Napa County	Design
	Main Street Water Main	City of Napa	Construction
	Redwood Road	City of Napa	Construction
Napa County Conservation, Development and Planning Department (CDPD)	Angwin Project	Pacific Union College, Angwin, Northern Napa County	Master Development Plan: July 2007
	Lake Luciana Project	Weeks Lake, Pope Valley, Napa County; Pope Valley Road and Barnett Road	Planning
	Napa Pipe Project	29 intersections in City of Napa, City of American Canyon, Napa County,	Planning
	Napa River Rutherford Reach Restoration Project	Reach of Napa River near Zinfandel Lane and Oakville Crossroad, City of Napa	MND 2008
	Upper Range Vineyard Project	678 acres between Silverado Trail and Lake Hennessey, 13 miles north of the City of Napa	Planning
	General Plan 2008	Napa County	Current/ Ongoing
	General Plan Housing Element	Napa County	Current/ Ongoing
Napa Sanitation District (Napa SD)	Napa State Hospital Recycled Water Pipeline	Napa Valley College and Napa State Hospital	Design
	Lower Alphabet Street Sewer Improvement Project	A Street to I Street between York Street and Jefferson Street in the City of Napa	Design
	Stonecrest Area Sewer Project	Stonecrest Drive vicinity in City of Napa	Design
	I/I Reduction Construction Projects	City of Napa	Planning
	Alphabet Street –Upper Section Sewer Project	Alphabet Streets west of York Street in City of Napa	Planning
	Browns Valley Road and First Street	City of Napa	Planning
	Pump Station Removal (in conjunction with Napa County Public Works)	First Street and Soscol Avenue	Fall 2009
Napa Flood and Water Conservation District	Napa River- Napa Creek Flood Protection Project	City of Napa from Highway 29 at Butler Bridge north to Trancas Street, 6 miles on the Napa River, 1 mile on Napa Creek	Scheduled for completion 2011
City of Napa Planning Department	Stanly Ranch Resort Development	North of Napa River, east of Cuttings Wharf Road, south of Hwy 12/121	FEIR

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	City of Napa		
City of Napa Planning Department (cont.)	Bridge Replacement	First Street from Juarez Street, over Napa River, west of Silverado Trail; detour routes on Lincoln, Soscol, 3rd Street, and Hwy 121	Bridge Closure until Fall 2009
City of Napa Public Works Department –Engineering Division Capital Improvements Projects	Various Road Widenings	Big Ranch Road at Trancas Street to Salvador Creek Bridge; Linda Vista Avenue and Trower Avenue; Jefferson/ Salvador	Under Construction until 2009/2010
	Hidden Glen Park Project	Hidden Glen Landfill	Estimated completion 2009
	Guardrail Installation	East Avenue	Estimated completion 2009
	Annual Street Resurfacing	Various city roadways	Fall 2009
	Street Widening	1000 block of Orchard Avenue on the south side of the street	Fall 2009
	First Street River Overlook (in conjunction with Napa SD pump station removal)	First Street and Soscol Avenue	Fall 2009
	Dock Project	4th Street Boat Dock, Main Street	Estimated Completion Fall 2009
City of Napa Public Works Department –Transportation Division Capital Improvements Projects	Signalization Projects	Redwood Road at Carol Drive; California Blvd at Pueblo Avenue; Jefferson Road at Old Sonoma Road; Highway 29 at Imola Road	Under Construction 2008-2009

RECENT PROJECTS

	Marin County		
Marin County Flood Control and Water Conservation District	Improvements in Novato Flood Zone 1	Portion of Vineyard Creek, upstream of Center Road to downstream of McClay Avenue	November/December 208
City of San Rafael Department of Public Works	Intersection Improvements	Medway Street/ Canal intersection	Summer 2008
	Pedestrian Safety Improvements	Canal Street	December 2009
	Pavement Rehabilitation	Alameda del Prado	Completed 2008
	Bridge Replacement	Center Road at Vineyard Creek, Novato	October 2008
	Road Improvements	Cypress Avenue on south side of Novato Blvd, west of Diablo Avenue; Kendon Lane Assessment District from Center Road to the southerly end	Completed 2008
	Bridge Replacement	Grant Avenue over Novato Creek near intersection with Virginia Avenue	Completed 2008
	Pavement Rehabilitation	Novato Blvd. between Grant Avenue and Eucalyptus	Completed 2008
	Hamilton Firehouse Conversion	Hamilton Air Force Base, City of Novato	April 2008
	Pioneer/ Scottsdale Park Improvements	City of Novato	2003-2008

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Marin County (cont.)		
City of Novato Public Works (CIP) (cont.)	Teen Center Renovation	Grant Avenue, City of Novato	June 2008
	Canyon Roadside Ditch Replacement	City of Novato	2007-2008
	Scour Mitigation	Grant Avenue Bridge at Novato Creek, City of Novato	2007-2008
	Flood Protection Levee Improvement	Hamilton Field, City of Novato	2007-2008
	Drainage Modifications	McKeon Court, Wilmac Court, City of Novato	2007-2008
North Marin Water District	Stone Tree Golf Course Recycled Water Pipeline	Adjacent to Highway 37, Novato	Completed June 2007
	Stafford Lake Water Treatment Plant	Novato Creek, 4 miles west of downtown Novato, adjacent to Novato Boulevard	Completed; in operation
	Sonoma County		
Caltrans District 4	Road Improvements	101 East Blithedale Offramp	2008
	Culvert Replacement	Route 1 near Fort Ross, at Fort Ross Creek, Jenner	2008
	Culvert Replacement	Route 1 near Timber Cover, 2 miles south of Fort Ross State Historic Park	2008
	Embankment reconstruction	Route 1 near Jenner, 0.2 miles west of Pacific Avenue	2008
	Rock slope protection Installation	Route 1 in Fort Ross Historic Park, 0.5 mile east of Fort Ross Road	2008
	Drainage system installation	Route 116 at Route 12 in Sebastopol	2008
	Soldier Pile Wall Construction	Route 116 near Guerneville, east of Mays Canyon Road	2008
	Laguna de Santa Rosa #20-0035 bridge replacement	Route 12 in Sebastopol	2008
	Culvert Replacement	Route 121 near Schellville, 0.6 miles north of Flying Arrow Ranch Road	2008
	Replace Maacama Creek Bridge #20-42and Redwood Bridge # 20-43	Route 128 near Napa	2008
Sonoma County Transportation and Public Works	Road Slide Repair	Sonoma Mountain (1st District)	December 2008
	Rubberized Asphalt Overlay Project (various roadways)	Porter Creek in East Sonoma County toward Calistoga; D Street west of Petaluma City limits; Airport Blvd.	October 2008
	Sidewalk Replacement	Moorland Avenue (5th District)	August 2008
	Road Improvements, turn lanes	River Road at Sunset Beach	August 2008
Sonoma County Permits and Resource Management Department	Canyon Rock Quarry	unincorporated Sonoma County west of the Town of Forestville	FEIR, 2006

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Sonoma County (cont.)		
Sonoma County Permits and Resource Management Department (cont.)	Canon Manor	Sonoma County adjacent to City of Rohnert Park Petaluma Hill Road, East Cotati Avenue, Bodway Parkway.	FEIR 2005, Completed 2008
	Gallo Winery Expansion	Dry Creek Road, Healdsburg	FEIR 2005
	Sonoma Country Inn	Graywood Ranch, State Route 12 in the unincorporated community of Kenwood in Sonoma County; north side of Route 12 near the intersection of Route 12 and Lawndale Road; approximately 0.75 mile east of the Pythian Road intersection with Route 12 and approximately 0.6 mile west of the intersection of Adobe Canyon Road	FEIR 2004
	Korbel Summer Crossing	Odd Fellows Park Road	Completed July 2008
	Riverside Drive Bridge Replacement	Sonoma Creek	Completed 2008
	River Road Viaduct at Eagle Nest Lane, 2006	Sonoma County	Completed 2008
	Windsor Intermodal Facility – Phase II, 2006	Sonoma County	Completed 2008
	Seismic Retrofit of Russian River Bridge (20C-016) on Moscow Road, 2002	Sonoma County	Completed 2008
	Santa Rosa Avenue Storm Drain Phases 1 & 2	Sonoma County	Completed 2003
	Napa Road at Eighth Street East Phase II Storm Drain; Signalization	Sonoma County	Completed 2008
	Seismic Retrofit of Russian River Bridge #20C-00	Crocker Road	Completed 2006
	Seismic Retrofits of Laguna de Santa Rosa Bridge	Guerneville Road and South Fork of Gualala River Bridge; Hauser Bridge Road and House Creek Bridge ;Stewarts Point-Skaggs Springs Road	Completed 2008
	Seismic Retrofits on Dry Creek Bridge, Freezeout Creek Bridge, and Petaluma River Bridge	Stewarts Point-Skaggs Springs Road, Freezeout Road, Petaluma Boulevard North	Completed 2008
	Overlay Projects (various locations)	Lakeville Road; Arnold Drive; Adobe Road; River Road, Sonoma County	Completed 2008
	Napa County		
Napa County Public Works	Diamond Mountain Road	City of Calistoga,	Complete
	Steele Canyon Road	City of Napa	Complete
	Deerpark Asphalt Overlay	Deerpark Road, St. Helena ; from its intersection at Silverado Trail to Howell Mountain Road	Complete
	Sunnyside Drive and Deerpark Road	City of St Helena	Complete
City of Napa Public Works Department – Engineering Division Capital Improvements Projects	Commuter Bike Path	Along Napa Valley Railroad from Main Street to Lincoln Avenue	Fall 2008

TABLE 4-1 (Continued)
PLANNED AND APPROVED PROJECTS IN THE PROJECT AREA AND VICINITY

Jurisdiction	Project	Area Affected	Status
	Napa County		
City of Napa Public Works Department – Engineering Division Capital Improvements Projects (cont.)	Napa River Oxbow Preserve Project	13 acre adjacent to Napa River	Summer 2008
	Underground Utility Project	1st and 2nd Streets, California Boulevard, and Jefferson Street, Napa	Fall 2008
	River Park Canal Maintenance District	Various canals at River Park, City of Napa	Fall 2008
	Underground Storage Tank Investigation and Remediation	645 Soscol Avenue	2008
	Roadway Resurfacing	McKenzie Drive between Silverado and Oxbow Preserve; various	Fall 2008
Napa Sanitation District (Napa SD)	North Napa Sewer Trunk Line Rehabilitation Project	Various segments along the North Napa Sewer Trunk line	Completed 2004
	Trancas Street Manhole Trenchless Rehabilitation	Trancas Street near Soscol, City of Napa	Completed 2003
	Streblow Drive Recycled Water Pipeline Project	Streblow Drive from Kennedy Park Recycled Water Pipeline Project, near railroad tracks along Highway 221, affects Napa Valley College and Napa State Hospital	Complete
FORESEEABLE FUTURE PROJECTS			
	Marin County		
Marin County Department of Public Works (CIP)	Miller Creek Road and Trail Inventory for Watershed Plan	San Rafael	2008-2009
	Fish Protection Project	San Geronimo Creek	2008-2009
	Ring Mountain Enhancement Plan		2008-2009
	Railroad grade culvert Installation	Blithedale Creek	2008-2009
	Baywood Canyon Barn Creek Restoration	Loma Alta	2008-2009
	Playground Improvements	Village Green at Stinson Beach	2008-2009
	Irrigation	Civic Center Lagoon	2008-2009
	Dredging	Novato Creek	2008-2009
	Vineyard Creek Improvements, Zone 1 Phase II	Center Road, Arbor Circle to McClay Road, Novato	2008-2009
	Bothin Marsh Restoration ad Flood Control Improvements Project	Coyote Creek and Bothin Marsh in Bothin Marsh Open Space Preserve	2008-2009
	Seminary Drive Pump Station	Redwood Highway, Highway 1 Seminary Drive Northbound off-ramp	2008-2009
	Slough Culvert Replacement	Corte Madera	2008-2009
	Fish Ladders	Multiple locations: Wood Acre Creek, San Geronimo Creek, Arroyo Creek, Larsen Creek, Montezuma Creek, Cheda Creek	2008-2009

SOURCE: Compiled by ESA, 2008; Caltrans, 2008; City of Sonoma, 2008; City of San Rafael, 2008; City of Novato' 2008; Marin County, 2008; City of Napa, 2008; Napa County, 2008; Sonoma County, 2008; Napa SD, 2008; SCWA 2008

Plans for Sonoma County, Napa County, and Marin County General Plans, and the Cities of Sonoma, Napa, San Rafael, and Novato. The growth inducement potential of the NBWRP and the secondary effects of accommodating planned growth within the project area are discussed separately in **Chapter 5, Growth Inducement and Secondary Effects of Growth**.

4.2.5 Description of Cumulative Projects

A discussion of individual water service and water recycling projects considered in the Sonoma, Napa, and Marin County areas, and their anticipated environmental impacts is provided below. **Table 4-2** provides a summary of these projects, their geographic relationship to the NBWRP service areas, the types of impacts anticipated for their implementation, and the potential for the NBWRP to contribute to cumulative impacts associated with these projects.

Marin Area Projects

North Marin Water District and Novato Sanitation District Stone Tree Golf Course Ponds

The newly-constructed Recycled Water Facility, located adjacent to State Route 37, commenced operation in June 2007. The 0.5-million gallons per day (mgd) treatment facility provides irrigation water to the Stone Tree Golf Course in Novato. The Novato Sanitation District (NSD) is responsible for treatment of wastewater to meet California Department of Public Health (CDPH) Title 22 requirements for unrestricted bodily contact, while the North Marin Water District is responsible for distribution. This project is a first step to introduce and expand the use of recycled water within the Novato Service Area. The facility will offset approximately 260.95 acre-feet per year (AFY) of potable water demand for landscape irrigation, reduce dependence on imported water supply from the Russian River, and reduce wastewater discharge into the San Pablo Bay.

Impacts Identified

Impacts typically associated with recycled water projects include short-term construction impacts to land use, air quality, traffic, noise, aesthetics, and water quality. Other potential impacts include disruption of habitat for wildlife species, and impacts to water quality from increased erosion and sedimentation during construction.

Marin Municipal Water District Desalination Project

The Marin Municipal Water District (MMWD) conducted a Seawater Desalination Pilot Study and produced an Engineering Report that examined the potential for developing a desalination facility to address drought-related drinking water supply issues. The report included cost estimates and design criteria. The Final EIR for the Desalination Project was released by the MMWD in December 2008 and certified by the Board of Directors on February 4, 2009[3]. The

[3] Although the FEIR was certified, the project itself has not been approved. Desalination has been deferred until MMWD adopts a rate increase and the next 2-year budget. It is estimated that construction of the desalination facility would not occur for at least 1-2 years after project approval and permitting. On February 11, 2009, MMWD presented other water supply options to the Board, including revised operation procedures at reservoirs, potential connection with the Kastania pipeline (SCWA-operated), increased conservation efforts, and expanded recycled water use.

TABLE 4-2
SUMMARY OF OTHER WATER RESOURCE PROJECTS AND RELATIONSHIP TO NBWRP

	Project Impacts	Located in North San Pablo Bay Watershed?	Located in Bay Area Airshed?[4]	Imported Surface Water Supply Source		NBWRP Contribution?	NBWRP Contribution Type	NBWRP Contribution Significant?	NBWRP Contribution Cumulatively Considerable?
				Russian River	State Water Project				
General Plan Development	Construction	Yes	Yes	Marin Sonoma	Napa	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
General Plan Infrastructure	Construction Operations	Yes	Yes	Marin Sonoma	Napa	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
WATER RESOURCE PROJECTS									
Marin County Projects									
Stonetree Recycled Water Project	Operations	Yes	Yes	Yes	No	Yes	Water Supply GHG Emissions	Beneficial No	No No
MMWD Desalination	Construction Operations	Yes	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
Sonoma County Projects									
SCWA Water Supply Project	Construction Operations	Yes	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
Russian River Integrated Flow and Restoration (RRIFR)/SWRCB 1610 Modification	Construction Operations	Yes	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
Eel River and Potter Valley Project	Operations	No	No	Yes	No	Yes	Water Supply	Beneficial	No
North County Agricultural Recycling Project	Construction Operations	No	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
City of Santa Rosa Subregional Urban Water Reuse System	Construction Operations	No	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No

[4] The term "airshed" is defined by the Bay Area Air Quality Management District (BAAQMD) as a geographical area of which, because of topography, meteorology, and climate, shares the same air. For analysis of the NBWRP, airshed refers to all areas that share the same air within the action area. This term is an applicable in the analysis of cumulative impacts on air quality as a result of concurrent construction or operation of projects within the same spatial and temporal locations.

TABLE 4-2 (Continued)
SUMMARY OF OTHER WATER RESOURCE PROJECTS AND RELATIONSHIP TO NBWRP

	Project Impacts	Located in North San Pablo Bay Watershed?	Located in Bay Area Airshed?	Imported Surface Water Supply Source		NBWRP Contribution?	NBWRP Contribution Type	NBWRP Contribution Significant?	NBWRP Contribution Cumulatively Considerable?
				Russian River	State Water Project				
Sonoma County Projects (cont.)									
City of Petaluma Recycled Water Master Plan	Construction Operations	Yes	Yes	Yes	No	Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
Russian River County Sanitation District Equalization Basin Storage Program	Construction Operations	No	Yes	Yes		Yes	Construction Water Supply GHG Emissions	No Beneficial No	No No No
Sea Ranch Sanitation Zone Wastewater Treatment, Storage, and Disposal Modification Project		No	Yes	Yes		Yes	Water Supply	Beneficial	No
SVCSD Trunk Line Project	Construction	Yes	Yes	Yes	No	Yes	Construction	No	No
SVCSD Lateral Project	Construction	Yes	Yes	Yes	No	Yes	Construction	No	No
North Coast IRWMP	Construction Operations	No	No	Yes	No	Yes	Water Supply	Beneficial	No
San Francisco Bay Area IRWMP	Construction Operations	Yes	Yes	Yes		Yes	Construction Water Supply	No Beneficial	No
Sonoma Valley Groundwater Management Plan	Operations	Yes	Yes	Yes	No	Yes	Water Supply GHG Emissions	Beneficial No	No No
Napa County Projects									
Napa Salt Marsh Restoration Project	Construction Operations	Yes	Yes	Yes	No	Yes	Water Supply Construction	Beneficial No	No
Greater North Bay Area Projects									
Town of Windsor	Construction Operations	No	Yes	Yes	No	Yes	Water Supply	No	No
Regulatory and Other Cumulative Projects									
303(d) Listing of Waterways	Construction Operations	Yes Yes	Yes Yes	Yes Yes	No No	Yes Yes	Water Quality Water Quality	No Beneficial	No No
Sonoma County Aggregate Resources Mining Plan	Construction Operations	No No	Yes Yes	Yes Yes	No No	Yes Yes	GHG Emissions GHG Emissions	No No	No No

proposed Desalination Project consists of raw water intake, pretreatment system, a reverse osmosis system, disinfection, brine disposal, and delivery infrastructure. The desalination plant, which could supply up to 15 mgd, would be located in San Rafael. "Raw water" or "feed water" from San Rafael Bay would be collected through an intake at the end of the proposed refurbished Marin Rod & Gun Club pier near the Richmond-San Rafael Bridge. Water would be subject to treatment and brine would be discharged back to the Bay. It has been determined that combining the brine with treated wastewater effluent would reduce the concentration of dissolved salts released into the Bay (URS, 2008).

Impacts Identified

The EIR identified two significant impacts that would occur as a result of project implementation. Short-term construction activities would inevitably cause temporary increased ambient noise, even with mitigation including limiting construction to daytime hours, using equipment with mufflers, locating power generators away from sensitive receptors, and providing notification of construction schedules. Implementation of the project would inevitably adversely affect the visual character of the San Quentin Ridge, however mitigation measures require consultation with a landscape architect to develop a landscaping plan to reduce the visual contrast between the facility and the ridgeline. The MMWD Desalination Project EIR cumulative impact analysis determined that the project would not contribute to cumulatively considerable impacts.

Relationship to NBWRP

Under Phase 1 and the Basic System, recycled water supplies from LGVSD would be served to Hamilton Field in North Marin Water District's (NMWD) service area. Under Phase 1 and the Basic System, a potable offset of NMWD's supplies would occur.

Under the Partially Connected System, facilities would be constructed to provide recycled water service to the Peacock Gap Golf Course, which currently uses potable water supplies served by MMWD for irrigation demands. Under the Partially Connected System, a potable offset of MMWD supplies would occur.

Sonoma Area Projects

Russian River Supply

Water Supply, Transmission, and Reliability Project (Water Project)

Sonoma County Water Agency (SCWA) proposed the Water Project to provide a safe, economical and reliable water supply to meet the defined current needs and future contractor demands within the SCWA service area by implementing water conservation techniques, increasing the amount of water that could be released from Lake Sonoma and diverted from the Russian River by the transmission system and expansion of water transmission facilities. The Water Project would provide water to the water contractors and other customers in Sonoma County and portions of Marin County. The Restructured Agreement for Water Supply between SCWA and eight public entities, including Cotati, Petaluma, Rohnert Park, Santa Rosa, Sonoma, the Town of Windsor, North Marin Water District, and the Valley of the Moon Water District,

authorizes SCWA to operate and maintain a water supply and transmission system that includes delivery limits consistent with the General Plans of participating cities. The Agreement also includes specific requirements for conservation, including BMPs defined by the California Urban Water Conservation Council, and authority to enforce compliance. It provides for the financing and funding of required Water Project facilities. Elements of the Water Project that have the potential to combine with impacts of the NBWRP include transmission system facilities constructed as part of the Water Project, including water production facilities, pipelines, tanks, pumps, and other related equipment.

Impacts Identified

The Notice of Preparation for the Water Project was published in February 2005 and the Draft Environmental Impact Report was released in 2008. The majority of environmental impacts of the Water Project identified in the EIR would occur at Lake Sonoma, along Dry Creek downstream of Lake Sonoma/ Warm Springs Dam, and along the mainstem of the Russian River downstream of the confluence with Dry Creek. Other project impacts would occur within the SCWA service area and at locations along routes of the transmission system and reliability features. The Water Project EIR includes implementation of facilities within the North San Pablo Watershed and within the San Francisco Bay Area Air Basin. Elements of the Water Project that may result in impacts similar to those identified for the NBWRP include the construction of the Annadel-Sonoma pipeline between three sets of water storage tanks: the Annadel Tanks in Santa Rosa, the Eldridge Tanks in Eldridge, and the City of Sonoma Storage Tanks.

Impacts related to these facilities include short-term and long-term environmental impacts. The EIR identifies construction-related impacts on visual quality, vegetation removal, and public access. Operation of components of the project would require additional electricity that would result in the consumption of non-renewable energy resources and increased greenhouse gas emissions.

Relationship to NBWRP

SCWA's Water Project proposes additional diversions on the Russian River, and construction of distribution facilities that would occur within the North San Pablo Bay Watershed in the vicinity of Petaluma and Sonoma. However, the NBWRP would not contribute to or affect proposed diversions from the Russian River system. The NBWRP would recover treated wastewater currently discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation. Therefore, the NBWRP would not contribute to significant cumulative water supply impacts.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the North San Pablo Bay Watershed and the San Francisco Bay Area Air

Basin. The NBWRP's potential contribution to these cumulative impacts is further discussed in **Section 4.3** below.

Russian River Instream Flow and Restoration Project and Modification of SWRCB Decision 1610

Over the last 14 years, the SCWA has been working with regulatory agencies, primarily the National Oceanic and Atmospheric Administration (NOAA Fisheries) to address fisheries issues in the Russian River watershed. Two salmonid species inhabiting the Russian River watershed, Chinook salmon and steelhead, have been listed as threatened under the federal ESA, and one species, coho salmon, has been listed as endangered under the federal ESA and under the California ESA. Protective regulations of the ESA prohibit the "take" of these species. "Take" is broadly defined in the ESA and its implementing regulations; it includes not only intentionally killing a protected species, but also actions that unintentionally result in actual harm to an individual of a protected species, including adverse modification of habitat.

Because SCWA's water supply facilities and operations have the potential to adversely affect the three listed species, SCWA entered into a Memorandum of Understanding (MOU) in December 1997 to participate in a consultation under Section 7 of the ESA. The other signatories of the MOU include the USACE (federal agency) and the National Oceanic and Atmospheric Administration (NOAA). In September 2008, NOAA Fisheries issued a Biological Opinion evaluating the impact of SCWA's and the USACE's operations on the listed species and identifying Reasonable and Prudent Alternatives (RPAs) and Recommended and Prudent Measures (RPMs) to be implemented by SCWA and the U.S. Army Corps of Engineers (USACE) to address impacts and potential impacts on listed salmonids. The Biological Opinion concluded that some elements of the USACE and SCWA activities in the Russian River watershed could result in an adverse modification of habitat and jeopardize the continued existence of coho salmon and steelhead in this evolutionary significant unit (ESU).

The RPA and RPM involve both immediate and long-term actions to improve habitat and fish populations. These RPAs and RPMs will guide USACE and SCWA operations to protect threatened or endangered salmonids in the Russian River watershed through the year 2018. Operational changes related to SCWA's water supply facilities include modifications to SWRCB's Decision 1610 to reduce instream flow requirements in the mainstem Russian River and Dry Creek to be more protective for salmonids, changes to how the Russian River estuary sand bar breaching is managed, and improvements to the fish screens and intake structures at the SCWA's Wohler and Mirabel facilities. Alternative actions to support reducing flows in the Russian and Dry Creek were also presented, and included a Dry Creek Bypass Pipeline between Warm Springs Dam and the confluence of Dry Creek with the Russian River, fish habitat enhancements to Dry Creek, and a groundwater banking program.

Modification of SWRCB Decision 1610

Central to the RMAs and RMPs is modification of SWRCB Decision 1610, which established minimum flow requirements for the Russian River in 1986. In May 2007, SCWA identified the need to begin the process of requesting long-term amendments to the instream flow requirements

for the mainstem Russian River and Dry Creek specified in the SWRCB's Decision 1610. These amendments are needed as a result of changes in operations of PG&E's Potter Valley Project (PVP) and changes in instream flow management identified in the Russian River Biological Opinion.

It has become apparent in recent years that the Russian River minimum instream flow requirement may no longer be appropriate. Decision 1610 was adopted before the listing of the three salmonid species under the ESA, and did not specifically address the importance of fall storage in Lake Mendocino to the Chinook salmon migration. Moreover, although Decision 1610 assumed that greater flows were always better for fishery resources, information developed as part of the Biological Opinion indicates that this may not be so, at least for salmonid species in Dry Creek, the Russian River, and the Russian River estuary. Decision 1610 expressly recognized that later fisheries studies might give rise to a need to change the minimum flows established by Decision 1610. Decision 1610 also expressly contemplated that flow changes might be needed in the event of a change in flows from PG&E's PVP, which has now occurred.

The analysis prepared as part of the Biological Opinion determined that lower summer flows in Dry Creek, the upper Russian River (above Healdsburg) and the estuary would improve habitat for the listed salmonid species, while increasing the pool of cool water available in Lake Mendocino to support the fall Chinook salmon migrations runs. Adjusting Decision 1610 flows to meet these fishery objectives would aid in the conservation and recovery of the listed salmonid species.

In 2002, 2004 and 2007 water storage levels in Lake Mendocino declined to dangerously low levels requiring actions to reduce releases and preserve storage. In 2002, the terms of Decision 1610 authorized the necessary reductions in stream flows, but that was not the case in 2004 and 2007. In both of those years, the SWRCB granted the Agency temporary urgency changes in its water right permits, approving temporary lower minimum instream flow requirements to allow water to be preserved in storage in Lake Mendocino. The situation during these years was due to the lack of precipitation during the winter storm season, and in 2007, to unexpectedly lower inflows from the PVP because of changes in the implementation of PG&E's FERC license.

SCWA has started conducting engineering feasibility studies to identify alternatives that could be considered in an EIR/EIS for amending Decision 1610. Alternatives could include a geomorphic reconfiguring of Dry Creek (to improve fish habitat, reduce bank erosion and allow for water supply releases), a Dry Creek Pipeline to divert water supply releases from Lake Sonoma around Dry Creek, and expansion of the conservation fish hatchery at Warm Springs Dam, as well as other alternatives and measures that may be identified. These feasibility studies are anticipated to be completed in 2010 and would allow for development of a project description for the EIR/EIS for amending Decision 1610. SCWA will also be initiating development and meetings of a stakeholder group that will be independently facilitated.

The process by which Decision 1610 was adopted took many years. Similarly, the process to modify Decision 1610 will take many years, and it is consistent with the SCWA's long-term goal of creating a sustainable, balanced system that meets the needs of SCWA's water contractors,

other water users, and the needs of the listed salmonid species. However, because the outcome of the process of modifying Decision 1610 cannot be known with any certainty now, the SCWA Water Project was developed under the assumption that Decision 1610 requirements would remain in effect.

Impacts Identified

The Russian River Integrated Flow and Restoration Project (RRIFR) Program EIR/EIS is scheduled for release in 2012, and the NOP for the EIR/EIS has not yet been released. The nature of impacts associated with the RRIFR Program are anticipated to be related to the interim and permanent changes in release patterns from Warm Springs Dam and Coyote Dam to enhance habitat for salmonids, habitat enhancement of six miles of Dry Creek, and from changes in estuary management to provide enhanced rearing habitat for salmonids. In general, these flow changes are proposed in order to enhance habitat conditions within Dry Creek, the Russian River Estuary, and the east Fork of the Russian River. Implementation of habitat enhancement in Dry Creek would have the potential for short-term construction impacts, including impacts to water quality, sensitive species habitat, cultural resources, land use, and recreational uses. Flow changes identified in the Russian River Biological Opinion would reduce flow levels during summer months. Potential impacts would be related to resulting water quality, reduced in-stream flow, impacts to recreational uses, socioeconomic impacts, and impacts to estuary flora and fauna.

Relationship to NBWRP

The RRIFR Program is proposed in order to address changes contemplated in Biological Opinion issued on September 24, 2008. All management actions are proposed for implementation within the Russian River Watershed, and no facilities would be constructed within the North San Pablo Bay Watershed.

The NBWRP would recover treated wastewater discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation. Therefore, the NBWRP would not contribute to direct or indirect impacts that may be associated with modification of Russian River hydrology to benefit listed salmonid species.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. The NBWRP's potential contribution to these cumulative impacts is further discussed in **Section 4.3** below.

Eel River and Potter Valley Project

The Eel River watershed is located in Humboldt, Mendocino, Lake, Glenn, and Trinity counties. The Potter Valley Project, owned and operated by PG&E, is comprised of several main elements: Cape Horn Dam, a diversion tunnel, Scott Dam, Lake Pillsbury, and the Potter Valley Power

Plant. The Eel River Power and Irrigation Company constructed the Cape Horn dam and Van Arsdale Reservoir on the Eel River in Mendocino County in 1908. A diversion tunnel leads from the Eel River to the East Fork of the Russian River, and has been used to generate electrical energy at the Potter Valley Power Plant. Scott Dam was constructed at the headwaters of the Eel River, forming Lake Pillsbury. Water is released from the lake to the Eel River, then re-diverted downstream at Cape Horn Dam to the Potter Valley Power Plant through the diversion tunnel. The water continues through the East Fork of the Russian River to Lake Mendocino.

During the summer and fall months, water in the Russian River downstream of Coyote Valley Dam and above Dry Creek is derived from releases stored in Lake Mendocino, some of which is derived from imported Eel River Water via the Potter Valley Project. The Federal Energy Regulatory Commission (FERC) regulates interstate transmission of electricity, natural gas, and oil, and licenses hydropower projects. FERC also has exclusive jurisdiction to establish instream flow standards on federally-licensed hydroelectric projects and has primary authority to review the Potter Valley Project (PVP) instream flow standards in the Eel River. The quantity of water PG&E can divert to the Potter Valley Power Plant is limited by PG&E's FERC license, which will expire in 2022.

From 1922 to 1992, 159,000 AFY of water was diverted to the Russian River. In 1998 PG&E applied to FERC for an amendment to the Potter Valley Project license to alter flows to benefit Eel River salmonid species. PG&E instituted interim PVP flow regimes which led to a reduction in average annual diversion from the Eel River to 131,000 AFY from 1999 to 2004. FERC most recently amended the PVP license on January 28, 2004 (106 FERC 61,065, 2004). On June 2, 2004 FERC issued an order denying a request for a rehearing of the January 2004 order (108 FERC 61,266, 2004). On July 18, 2006, the United States Court of Appeals, Ninth Circuit issued a Memorandum Opinion denying all petitions for review of FERC's 2004 order (California Sportsfishing Protection Alliance vs. FERC 193 Federal Appeal 655). PG&E changed PVP operations during the 2006-2007 water year due to errors in PG&E modeling regarding PVP flow requirements. As a result it is estimated PVP flows into the Russian River watershed will now average 103,000 AFY.

Relationship to NBWRP

The NBWRP would recover treated wastewater discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation. Therefore, the NBWRP would not contribute to direct or indirect impacts that may be associated with current operations or future modification of the Potter Valley Project operations.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. However, the Potter Valley Project is

located outside of the San Francisco Bay Area Air Basin. Therefore, implementation of the NBWRP would have the potential to contribute to cumulative effects related to this project.

Recycled Water Projects

North Sonoma County Agricultural Reuse Project

In March 2007, the SCWA and the U.S. Bureau of Reclamation released a Draft EIR/EIS for the North Sonoma County Agricultural Reuse Project (NSCARP). The purpose of the proposed NSCARP is to provide an alternative source of agricultural water to reduce reliance on natural water supplies and address regional water supply and regulatory issues. The proposed NSCARP would supply a total of 7,234 acre-feet of recycled water annually. This water would be delivered to prospective users in Alexander Valley, Dry Creek Valley, and the Russian River Valley to irrigate cropland, offset surface water use, increase summer flows of the Russian River, and reduce agricultural diversions. The public would benefit from this project through the reduction of use of riparian water supplies, the reduction of wastewater discharges to regional waterways, and from the environmental benefit to fish and wildlife. The project would provide presently developed agricultural lands within the Russian River, Alexander, and Dry Creek Valleys with a reliable water supply, thereby reducing demands on the region's natural water sources. The main source of water for this project will be tertiary treated municipal wastewater generated and conveyed in the Geysers Pipeline. Sources of recycled water may be available from the City of Santa Rosa Laguna Subregional Wastewater Treatment Facility, Airport / Larkfield / Wikiup Wastewater Treatment Plant, Town of Windsor Wastewater Treatment Facility, City of Healdsburg Wastewater Treatment Facility, City of Cloverdale Wastewater Treatment Facility, and the Geyserville Wastewater Treatment Facility. The project would involve construction of 18 off-stream water storage facilities; construction of approximately 108 miles of pipeline for transmission and distribution; construction of related structures, booster pump stations, and other appurtenances (SCWA; Bureau, 2007). An Engineering Feasibility Report was submitted to the US Bureau of Reclamation pursuant to Title XVI in March 2006 that identified potential sources of available recycled water, methods of conveyance and storage, service area, and costs. The Bureau of Reclamation will review a feasibility study and the DEIR and approve or reject the project based on Bureau guidelines. The final EIR/EIS is scheduled for release in 2009.

Impacts Identified

Impacts typically associated with recycled water projects include short-term construction impacts to land use, air quality, traffic, noise, aesthetics, and water quality. Other potential impacts include disruption of habitat for wildlife species, and impacts to water quality from increased erosion and sedimentation during construction.

There is a need to maintain instream flows on the Russian River, while simultaneously providing water for other uses, so the recycled water would offset surface water from the Russian River and its tributaries for agricultural irrigation. Implementation of NSCARP would augment water supplies and potentially decrease direct agricultural diversions from the Russian River, which would enable the SCWA to release less water from storage in Lake Mendocino and Sonoma to

meet water demands and instream flow requirements. This would result in more water being conserved in storage in these reservoirs, which would provide more operational flexibility for the SCWA to benefit fisheries sources in the Russian River (SCWA, 2007).

Language in the NSCARP Draft EIR/EIS supports the protection of surface water, maintains existing water rights, and precludes any additional water rights and appropriations:

> "The increased operational flexibility would not result in additional water being available for other uses because existing reservoir storage capacity, water rights, and flow requirements would not change. Though NSCARP would provide recycled water to be used in-lieu of potable water supplies, recycled water users who participate in NSCARP would not lose their existing water right, and their participation would not provide authorization for their existing water right to be used for other purposes or places of use not currently authorized. Therefore, NSCARP would not result in growth-inducing effects because the proposed project would not result in increased flows in the Russian River and any water that remains in the tributaries as a result of this project would not be available for appropriation by someone else" (SCWA, 2007).

No water right transfer or additional diversions will occur, but the DEIR/EIS anticipates that the growth and expansion of the nine incorporated cities in Sonoma County could contribute to agricultural land conversion to non-agricultural uses. The 1989 General Plan has policies that limit major expansions that could induce land conversion. Increased development could produce wastewater flows that exceed treatment capacity (SCWA, 2007).

Relationship to NBWRP

The NBWRP would recover treated wastewater discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system, and would expected to contribute to the beneficial impacts identified for the NSCARP. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation within the North San Pablo Bay Watershed.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. However, the NSCARP is located outside of the San Francisco Bay Area Air Basin. Therefore, implementation of the NBWRP would not have the potential to contribute to cumulative effects related to this project.

City of Santa Rosa Subregional Urban Water Reuse System

The City of Santa Rosa has implemented the Santa Rosa Subregional Urban Water Reuse System, which provides sewage disposal and treatment, recycled water storage, conservation, recycled water reuse and/or disposal, industrial waste pretreatment, and infiltration and inflow reduction. The existing Subregional Urban Water Reuse System encompasses a large portion of Sonoma County, including the cities of Santa Rosa, Rohnert Park, Cotati, and Sebastopol, as well as Alexander Valley, Dry Creek Valley and the Russian River from Mirabel to north of Healdsburg.

Under the Santa Rosa Subregional Urban Water Reuse System, the City of Santa Rosa currently uses recycled water that is tertiary treated at the Laguna Wastewater Treatment Plant, to irrigate cropland, golf courses, playgrounds, pasture, and parks. The current reuse program produces 7,000 acre-feet of discharge annually (City of Santa Rosa, 2008). Adoption of Resolution No. 25337 authorized the revision of the Water Reuse Program that would allow the City to commit excess recycled water to other beneficial uses. Since current wastewater is treated to a tertiary level and there exists an excess of water that would otherwise be discharged, the City of Santa Rosa has identified opportunities and developed and updated the Recycled Water Master Plan allocate future reuse of recycled water for beneficial purposes.

The Recycled Water Master Plan is part of the Incremental Recycled Water Program (IRWP). In 2007, the City of Santa Rosa released the Draft Environmental Impact Report for the IRWP which analyzed potential significant impacts associated with implementation of the IRWP Recycled Water Master Plan. The purpose of the IRWP is to provide reliable treatment, recycling, reuse, and disposal of wastewater volume from growth anticipated in local General Plans. The DEIR analyzes the six elements of the IRWP which include conservation, infiltration and inflow reduction, urban reuse, agricultural reuse, Geysers expansion, and discharge. Implementation of all program elements was anticipated to provide up to 17,560.4 AFY of recycled water for beneficial reuse annually (City of Santa Rosa, 2007). The urban reuse element would require increased capacity at the Laguna Plant in order to provide recycled water for existing irrigation sites. Under the Plan, a dual recycled water system would be installed in new development to supply recycled water for industrial or non-potable processes. Pipelines would extend from the Laguna Plant to an urban reuse area. Approximately 1,800 million gallons (MG) of additional storage would be required for full implementation. It is estimated that the urban reuse element could utilize 6,446 AFY of recycled water per year. The agricultural reuse element would also require capacity upgrades at Laguna Plant to provide recycled water for crop irrigation and frost control in the North County and east of Rohnert Park. A pipeline would extend from the existing Geysers Pipeline to the Alexander Valley, Dry Creek Valley, and Russian River irrigation areas. The Plan would require 1,200 MG of storage to support irrigation in areas east of Rohnert Park and 2,900 MG storage to support irrigation in the Alexander and Dry Creek Valleys. It is estimated that the agricultural reuse element could accommodate growth of recycled water flows up to 6,400 billion gallons.

Impacts Identified

The IRWP EIR determined that components of the conservation, infiltration and inflow elements would be affected by ground rupture, but would not cause significant adverse impacts to other resources. After mitigation, all elements would have a less than significant impact on surface water quality, public health, biological resources, and wetlands. However, the IRWP EIR determined that implementation of the urban reuse, agricultural reuse, Geysers expansion, and discharge elements of the IRWP would contribute to significant and unavoidable environmental impacts on transportation, noise, air quality, land use, cultural resources, and visual resources. Transportation impacts would be limited to the construction period. Operation of all components would contribute to an increase in carbon dioxide emissions, as well as increased noise. Upgrades at the Laguna Plant would significantly impact air quality by producing objectionable odors and

emitting greenhouse gases. The direct discharge facility, advanced membrane treatment facility, storage facilities, and pump stations would be inconsistent with existing land use designations, and in some cases, particularly under the Agricultural Irrigation element that would be implemented in the City of Healdsburg, incompatible with adjacent land uses. The IRWP EIR determined that, if implemented in conjunction with NSCARP, there would be a cumulative impact on land use, due to facilities that would be inconsistent with existing land use designations. Storage facilities, in particular, would impact the visual character of the area. When considered with other projects, the IRWP would cumulatively degrade groundwater quality in existing and future wells, which could be hazardous to the public. Similarly, the drawdown of groundwater due to interception of base flow by reservoirs is a localized impact that could be cumulatively considerable if other entities proposing reservoirs for either recycled water or potable water storage also intercept base flow to reduce groundwater recharge.

Relationship to NBWRP

The Santa Rosa Subregional Urban Water Reuse System is proposed to provide recycled water facilities within the Santa Rosa area. The total flow to be managed by the Subregional System is estimated to be 17,560.4 AFY. Implementation of the program would be anticipated to provide a potable offset of 17,560.4 AFY, thereby providing a beneficial impact by reducing demands on Russian River supplies. All proposed facilities are within the Russian River Watershed, and no facilities would be constructed within the North San Pablo Bay Watershed.

The NBWRP would recover treated wastewater discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system, and would expected to contribute to the beneficial impacts identified for the Santa Rosa Subregional Urban Water Reuse System. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation. Therefore, when considered with other recycled water programs within the region that would offset potable water demands on Russian River supplies, the NBWRP would contribute to a cumulative beneficial impact.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. The NBWRP's potential contribution to these cumulative impacts is further discussed in **Section 4.3** below.

City of Petaluma Water Recycling Expansion Program

The City of Petaluma completed a Draft EIR for the Water Recycling Expansion Program (WREP) in July 2008, and released the Final EIR in October 2008. The City anticipates certification of the EIR City Council consideration on November 3, 2008. Construction is scheduled to begin in 2009. The WREP consists of recycled water use for agricultural and urban uses within the Urban Growth Boundary of the City of Petaluma and unincorporated areas of Sonoma County south and east of the City. The Program will maximize Petaluma's water

resources by increasing Petaluma's water recycling from about 2,149 to 3,284.9 AFY at buildout of the General Plan 2025. The project proposes to implement a number of recycled water facility improvements from 2008 through 2014. At buildout, the WREP would provide 1,995.5 AFY of tertiary treated recycled water, and 1,151.25 to 1,289.4 AFY of secondary treated recycled water. Of the 1,995.5 AFY, 1,424.48 AFY would contribute to potable offset (Winzler & Kelly, 2008).

The WREP consists of conveyance facilities, distribution pipeline, 2.2 MG storage tank for tertiary recycled water, 0.5 to 1.0 MG open reservoir for secondary treated water, a new pump station, and other appurtenances. The EIR evaluates near-term improvements (the storage tank and about 2 miles of pipeline) at a detailed project-level; the remainder of the improvements and the use of recycled water is evaluated at a program-level.

Impacts Identified

Significant impacts on cultural resources, ambient noise levels, and biological resources are anticipated, but would be mitigated to a less-than-significant level upon implementation of BMPs and other mitigation measures. In the WREP EIR cumulative impact analysis, increased greenhouse gas emissions as a result of project implementation would potentially exceed pre-project levels and conflict with AB 32 and its governing regulations. The EIR states that there is uncertainty about the effectiveness of State reduction measures and how they will apply to local governments. Therefore, it could not be determined that there would not be a cumulatively significant impact. The impact analysis also determined that construction activities, when considered with other projects, would be cumulatively significant. Other significant impacts to land use, agriculture, and biological resources were identified, but mitigation was prescribed to reduce the impacts to a less than significant level.

Relationship to NBWRP

The City of Petaluma Water Recycling Program is proposed to provide recycled water facilities within the City of Petaluma and surrounding area. Proposed facilities would be constructed within the North San Pablo Bay Watershed. Implementation of the program would be anticipated to provide a potable offset of 1,996 AFY, thereby providing a beneficial impact by reducing demands on Russian River supplies.

The NBWRP would recover treated wastewater discharged to North San Pablo Bay, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for this purpose. As such, it would have a beneficial effect by reducing irrigation demands on the Russian River system, and would expected to contribute to the beneficial impacts identified for the Petaluma Water Recycling Program. This beneficial effect would also be applicable to groundwater and local surface water supplies that are currently used for irrigation. Therefore, when considered with other recycled water programs within the region that would offset potable water demands on Russian River supplies, the NBWRP would contribute to a cumulative beneficial impact.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction within the North San Pablo Watershed and long-

term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. The NBWRP's potential contribution to these cumulative impacts is further discussed in **Section 4.3** below.

Wastewater Treatment Plant (WWTP) Infrastructure Projects

Russian River County Sanitation District Equalization Basin Storage Project

The Russian River Sanitation District prepared an EIR for the Russian River WWTP Equalization Basin Storage Project (Storage Project). This project would add increase wastewater equalization capacity at the WWTP. The Notice of Preparation was released in March 2006 and the Draft EIR was released in August 2007. The project is comprised of a 4.3 MG earthen storage basin and appurtenant features, including underground piping and pumps.

Impacts Identified

The DEIR for the Russian River Equalization Basin Storage Project identifies the following potentially significant, which will be mitigated to a less than significant level:

- water quality, as a result of erosion from excavation and construction;
- cultural resources, during construction activities;
- biological resources, specifically the northwestern pond turtle, nesting bids, including raptors, and jurisdictional waters;
- sensitive receptors, form noise generated by facility operation;
- traffic, during construction;
- air quality, during construction; and
- increased exposure of people and structures to hazardous materials, wildland fires.

Relationship to NBWRP

The Russian River WWTP Equalization Basin Storage Project is proposed to provide increased effluent storage at the existing WWTP. Proposed facilities would be constructed within the Russian River Watershed, and are proposed in order to more effectively provide treatment during high flow events. Impacts are related to the construction of proposed facilities.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. The NBWRP would not contribute to

other cumulative impacts when considered with WWTP improvements occurring outside of the North San Pablo Bay Watershed, due to the lack of geographic proximity. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Sea Ranch Sanitation Zone Wastewater Treatment, Storage and Disposal Modifications Project

The Sea Ranch area is in the northern coastal area of Sonoma County. In 2007, SCWA prepared a Draft EIR to analyze three project alternatives to address sewage inadequacies in the Sea Ranch area. The primary objectives of the Project are to provide a reliable wastewater treatment, storage and disposal method for the Sea Ranch Sanitation Zone and to reduce the possibility of discharge violations at the Central Treatment Plant during large storm events and periods of high flow. Under the preferred alternative, the Central Treatment Plant would continue to treat raw wastewater to a secondary level and the storage and capacity of the plant would be expanded. The preferred alternative would not include new conveyance pipelines, but would require additional effluent storage ponds, and other appurtenances. Once constructed, the Sea Ranch Sanitation Zone Wastewater Treatment, Storage and Modifications Project would provide wastewater service for failed septic systems at the south end of the Sea Ranch area.

Impacts Identified

The EIR, prepared by SCWA in 2007, identified impacts to air quality, cultural resources, and biological resources to be less than significant after mitigation under the preferred alternative. Impacts to biological resources would have a significant cumulative impact.

Relationship to NBWRP

The Sea Ranch Sanitation Zone Wastewater Treatment, Storage and Modifications Project would provide wastewater service for failed septic systems at the south end of the Sea Ranch area. Proposed facilities would be constructed outside of the North San Pablo Bay Watershed. Impacts are related to the construction of proposed facilities.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the San Francisco Bay Area Air Basin. The NBWRP would not contribute to other cumulative impacts when considered with WWTP improvements occurring outside of the watershed, due to the lack of geographic proximity. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Sonoma Valley County Sanitation District Trunk Line Project

In September 2007, SVCSD released the Initial Study/ Mitigated Negative Declaration (IS/MND) for the SVCSD Sewer Trunk Main Replacement Project. The project proposed to abandon and replace the existing trunk main in the SVCSD service area from south of Watmaugh Road, east of Broadway, west of Nathanson and Schell Creeks, to the SVCSD WWTP. Approximately 5,650 linear polyvinyl chloride pipe would accommodate additional flows from stormwater and groundwater infiltration, improve structural stability, and reduce sanitary overflows. The abandoned pipeline would be filled will cement-sand slurry.

Impacts Identified

Upon completion of an Initial Study/ Environmental Checklist, SCWA determined that although the Trunk Main Replacement Project could have a significant effect on the environment, revisions described in a Mitigated Negative Declaration would reduce potential effects to a less-than-significant level.

Relationship to NBWRP

The SVCSD Trunk Line Project is proposed to alleviate capacity constraints within the existing collection system of the SVCSD WWTP. Proposed facilities would be constructed within the North San Pablo Bay Watershed, and are proposed in order to reduce the occurrence of Sanitary System Overflows, thereby reducing impacts to water quality. Impacts are related to the construction of proposed facilities.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the North San Pablo Bay Watershed and San Francisco Bay Area Air Basin. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

SVCSD Sewer Lateral Ordinance

The SVCSD has proposed an amendment to the existing Sewer Lateral Ordinance to reduce inflow and infiltration, prevent sanitary sewer overflow, and to reduce influent into treatment plant. Potential sewer problems include broken or defective cleanout, missing drain caps, separated joints, or root penetration. Current user responsibilities include installation and connection, cleaning and clearing, and joint maintenance. The proposed amendment would require lateral testing at residences prior to the sale of the property, after repair or replacement of a building sewer, or for general protection of public health. The proposed amendment may be

updated in 2010-2011, and would require lateral testing for commercial or multiple family structures by a specified dated and thereafter every ten years, after repair or replacement of a building sewer, or for general protection of public health. If a problem with a lateral is discovered, the owner would be required to repair the lateral and re-test it post-repair.

Impacts Identified

Impacts related to the implementation of the Sewer Lateral Ordinance would be limited to short-term construction impacts associated with lateral repairs. In general, lateral repairs are implemented between residences or commercial buildings and the roadway, and would not be anticipated to result in impacts beyond erosion of excavated areas. Over the long-term implementation of the Sewer Lateral Ordinance would be anticipated to reduce infiltration and inflow to local WWTPs, thereby reducing wet season peak flow events. This would provide operational benefits to WWTPs.

Relationship to NBWRP

The Sewer Lateral Ordinance would reduce infiltration and inflow to local WWTPs, providing operational benefits during peak wet weather events. Impacts are limited to the inspection and repair of individual laterals. The ordinance would include the Sonoma Valley; as such, some lateral repairs may occur within the recycled water service areas identified under the NBWRP.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water resource infrastructure within the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

North Coast Integrated Regional Water Management Plan

The North Coast Integrated Regional Water Management Plan (IRWMP) was adopted in 2007 to coordinate seven counties and seventy partnering entities and implement basin scale water management strategies. The North Coast Region covers all of Del Norte, Humboldt, Trinity and Mendocino counties, major portions of Siskiyou and Sonoma Counties and small portions of Glenn, Lake, Modoc and Marin. The plan provides guidance for future planning and management of North Coast waterways. The objectives of the plan are to conserve and enhance salmonid populations by protecting habitat and water quality, protect drinking water to ensure safety of public health, and provide adequate water supply with minimal environmental impacts, through an interagency approach. The plan acknowledges water supply issues and states water recycling

for compatible uses may alleviate the North Coast Region's reliance on rainfall. The plan is implemented through a variety of restoration, facility improvement, and erosion control projects, such as the Sonoma County Water Recycling and Habitat Preservation Project.

Relationship to NBWRP

Projects implemented under the North Coast IRWMP include water supply and recycled water facilities. Proposed facilities would be constructed outside of the North San Pablo Bay Watershed. Impacts are related to the construction of proposed facilities. Any impacts to water supply, water quality or water resources would occur outside of the North San Pablo Bay Watershed. Recognizing that a water supply is imported into the North San Pablo Bay Watershed, these project could affect the availability of water supply within the North San Pablo Bay Watershed.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water infrastructure projects proposed under the North Coast IRWP. However, all of those facilities are located outside of the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. The NBWRP would not contribute to other cumulative impacts when considered with water infrastructure improvements occurring outside of the watershed, due to the lack of geographic proximity. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

San Francisco Bay Area Integrated Regional Water Management Plan

The San Francisco Bay Area Integrated Regional Water Management Plan (IRWMP), published in November 2006 and adopted in January 2007, provides guidance for future planning and regional management of San Francisco Bay and its tributaries. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates water quality in San Mateo County, and major portions of Marin, Napa, Santa Clara, Alameda, and Contra Costa Counties. The objectives of the IRWMP are to protect and improve hydrologic functions, improve water supply reliability, protect and improve the quality of water resources, and enhance environmental resources and habitats. Planning and management challenges arise from the large geographic scope of the region and the diverse water management needs.

The San Francisco Bay Area IRWMP defines four "Functional Areas" for which a series of objectives, strategies, and projects are identified. The Functional Areas include the quality of water supply, wastewater and recycled water, stormwater management as it relates to flood protection, and habitat protection and restoration as it relates to watershed management (RMC,

2006). There are approximately 43 IRWMP projects related to wastewater and water recycling, including South Bay Aqueduct Recycled water Treatment Project, Redwood City Recycled Water Project, and the Pacifica Recycled Water Project, among others. These projects would provide recycled water for potable offset as a means of enhancing surface water quality in the San Francisco Bay and its tributaries, and improving water supply reliability.

The IRWMP also includes habitat restoration projects to address environmental challenges such as invasive species control, environmental water demands, and sensitive wildlife survival (RMC, 2006). The Sonoma Land Trust, in coordination with other participating agencies, has developed the Sears Point Restoration Project, a 2,327-acre restoration project located in Sonoma County on San Pablo Bay between the Petaluma River and Tolay Creek. The Sears Point Restoration Project would improve stormwater drainage, increase flood protection through construction of new levees, expand recreational opportunities by extending the San Francisco Bay Trail, restore 900 acres of upland areas with riparian species planting and native grassland management, control erosion and sedimentation, remove litter, enhance vernal pools, and restore 1,400 acres of diked baylands to a combination tidal and non-tidal marsh (RMC, 2006).

Relationship to NBWRP

NBWRP is part of the San Francisco IRWMP and would coincide with the various wastewater recycling projects and habitat restoration projects throughout the San Francisco Bay Region. Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water infrastructure projects proposed under the San Francisco Bay Area IRWMP. However, the majority of the water recycling projects is outside of the North San Pablo Bay Watershed; therefore, the NBWRP would not contribute to other adverse cumulative impacts when considered with water infrastructure improvements occurring outside of the watershed, due to the lack of geographic proximity. In general, concurrent implementation of the NBWRP and other IRWMP projects would generate long-term regional benefits for surface water quality and water supply reliability. The Sears Point Restoration Project coincides with the continuation of the Napa Salt Marsh Restoration Project and implementation of the proposed NBWRP, which would potentially result in regional benefits for sensitive habitat areas.

Sonoma Valley Groundwater Management Plan

Pursuant to the Groundwater Management Act California Water Code § 10750, the Sonoma Valley Groundwater Management Plan Basin Advisory Panel developed the Sonoma Valley Groundwater Management Plan to address the sustainability of local groundwater resources in light of groundwater depletion and increasing demands. The Basin Advisory Panel consists of representatives from SCWA, the City of Sonoma and the Valley of the Moon Water District, as well as members of the public, local business owners, farmers, and environmental interest groups. In 2007, the SCWA Board, City of Sonoma, Valley of the Moon Water District, and the Sonoma Valley County Sanitation District adopted the non-regulatory plan. The Plan identifies management practices that contribute to the sustainability of groundwater resources for future use for agricultural, industrial, residential, ecological, and recreational purposes that would be

implemented by local agencies to manage, protect, and enhance groundwater resources. Components of the Plan incorporate water quality control, monitoring, public involvement, and regional planning.

Relationship to NBWRP

The Sonoma Valley Groundwater Management Plan identified recycled water as one of the potential supply sources that could offset groundwater pumping within the area, and would assist in managing the basin for long-term sustainability.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of water infrastructure projects proposed within the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Napa Area Projects

Napa Salt Marsh Restoration Project

The Napa River Salt Marsh Restoration Project is a habitat restoration and salinity reduction project located at the northeast edge of San Pablo Bay adjacent to the Napa River, south of the City of Sonoma. This Napa-Sonoma Marsh Wildlife area consists of 9,850 acres of salt ponds, remnant slough and marsh formerly used as an industrial salt production facility. The California Department of Fish and Game (CDFG) purchased the property in 1994, SCWA worked with CDFG, the San Francisco Bay Regional Water Quality Control Board, the USACE and the Coastal Conservancy in development of a plan for restoration of these marshlands to support populations of fish and wildlife. The EIR for the Restoration Project was approved in April 2004, and the EIR/EIS was published in June 2004. Portions of restoration activities have been implemented, but the pipeline construction component has not been completed. The Water Delivery Option examined as Phase 1 in the SVCSD EIS includes the annual delivery of about 2,000 to 3,000 acre-feet of tertiary recycled water from the Sonoma Valley County Sanitation District for salinity reduction and subsequent agricultural production.

Impacts Identified

The Napa Salt Marsh Restoration Project EIR/EIS identified potential impacts associated with project implementation. The majority of significant impacts would occur as a result of construction activities. Construction impacts include degradation in water quality, disturbance of

special status species, release of hazardous materials, and increased dust. Other significant impacts from the project include removal of Soft Bird's Beak, erosion, creation of mosquito habitat, and potential for disturbance of human remains. Adverse cumulative impacts include hydrologic changes in the Lower Napa River, impacts to water quality, and colonization of invasive plant species. Beneficial cumulative impacts include establishment of sensitive plant communities, enhanced habitat suitability, increased sub-tidal habitat, and improved visual character.

Relationship to NBWRP

Napa River Salt Marsh Restoration Project EIR/EIS included construction of pumping and pipeline facilities from the SVCSD to provide recycled water to Pond 7 and 7A. These facilities are included in Phase 1 of the NBWRP. The provision of recycled water to these ponds is considered a beneficial impact, by providing a permanent water supply to provide dilution for bittern stored in these ponds.

Proposed facilities under the Napa Salt Marsh Restoration Project would be constructed within the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. Impacts associated with the restoration are primarily related to the construction of small scale facilities.

Construction and operation of the NBWRP would have the potential to contribute to cumulative impacts associated with short-term construction, including potential impacts to wetland features along the pipeline route. However, the NBWRP would provide environmental enhancement benefits by providing a long-term water supply to dilute bittern currently stored in Ponds 7 and 7A. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Greater North Bay Area

The following projects are related to water supply, yet fall outside the scope of the proposed project. These projects do not spatially or temporally overlap the proposed project, and are not anticipated to have a cumulative impact in conjunction with the proposed project. They are summarized to provide a complete spectrum of current, ongoing, and future recycled water projects. The project, impacts, and relevance to the project are described below.

Town of Windsor Water Reclamation Master Plan for Treatment, Storage, and Disposal

In October 2000, an EIR for the Town of Windsor *Water Reclamation Master Plan for Treatment, Storage, and Disposal* was released. The project was developed to implement infrastructure requirements for wastewater treatment, storage, and disposal to provide services for development anticipated under the *Town of Windsor General Plan*. The project would provide a technical framework for selecting the most appropriate wastewater reclamations system. The EIR examined the environmental impacts associated with the various elements of the project, which include Geysers recharge, pump stations, storage facilities, irrigation infrastructure, treatment capacity, and water conservation.

Impacts Identified

The EIR identified potentially significant, but mitigable, impacts from construction activities, irrigation, and discharge. Significant but mitigable impacts to geology and soils, water quality, land use and recreation, traffic, air quality, noise, and hazardous materials are anticipated. Significant and unavoidable impacts to biological resources, and land use are also anticipated. Subsequently, if the *Water Reclamation Master Plan* was implemented at the same time as other construction projects, there would be cumulative impacts associated with erosion, cultural resource disturbance, construction noise, and visual obstruction. Due to the short-term duration of construction activities and incorporation of mitigation measures, both project impacts and cumulative impacts would be less than significant. Habitat loss due to pond construction would be a significant and unavoidable impact, and subsequently, a cumulative impact.

Relationship to NBWRP

Environmental review, certification, and adoption of the *Water Reclamation Master Plan* has been completed. Proposed facilities would be constructed outside of the North San Pablo Bay Watershed. Impacts are related to the construction of proposed facilities. Any impacts to water supply, water quality or water resources would occur outside of the North San Pablo Bay Watershed. Recognizing that water supply is imported into the North San Pablo Bay Watershed from the Russian River Basin, this project could contribute to beneficial impacts to Russian River supplies associated with the offset of potable supplies for irrigation.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of the Town of Windsor Recycled Water Master Plan would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of wastewater treatment and water recycling facilities. However, all of those facilities are located outside of the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. The NBWRP would not contribute to other cumulative impacts when considered with infrastructure improvements occurring outside of the watershed, due to the lack of geographic proximity. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Wastewater Treatment Facility Projects

There are several wastewater treatment facility projects that have been proposed, approved or constructed for the existing Forestville County Sanitation District, Occidental County Sanitation, and the Russian River County Sanitation District in the west Sonoma County. The Cities of Cloverdale and Healdsburg have also proposed wastewater treatment modifications or expansions. These projects are examples of the wastewater infrastructure projects to improve or

increase treatment facilities in the Russian River Watershed. Any impacts related to these projects would occur outside of the North San Pablo Watershed. Some of these projects may also include recycled water elements in their implementation.

Impacts Identified

As previously noted for the Russian River County Sanitation District Equalization Basin Project, impacts anticipated to be associated with these types of projects include construction related impacts to geology and soils, water quality, land use and recreation, traffic, air quality, noise, and hazardous materials. Due to the short-term duration of construction activities and incorporation of mitigation measures, both project impacts and cumulative impacts would be less than significant. Long-term operational impacts would be associated with loss of habitat due to construction of new facilities, increased discharge to the Russian River, and increased energy use associated with new facilities. These types of impacts are anticipated to be reduced to a less than significant level through mitigation.

Relationship to NBWRP

Environmental review for these facilities is in various stages of completion. All five of the WWTPs are located outside of the North San Pablo Bay Watershed. Short-term impacts are related to the construction of proposed facilities, and would occur outside of the North San Pablo Bay Watershed and San Francisco Bay Area Air Basin. Any impacts to water supply, water quality or water resources would also occur outside of the North San Pablo Bay Watershed. However, recognizing that water supply is imported into the North San Pablo Bay Watershed from the Russian River Basin, these projects could alter the water quality of supplies generated in the Russian River due to increases in WWTP discharge to the Russian River System. Discharge from each WWTP is regulated by NPDES permits issued by the RWQCB. Compliance with permit requirements would be anticipated to reduce potential impacts to a less than significant level on a project by project basis.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Construction and operation of WWTP improvements operated by SCWA, the City of Cloverdale, Town of Windsor and City of Healdsburg and other WWTP operators within the Russian River Watershed would have the potential to contribute to cumulative impacts associated with short-term construction and long-term operation of wastewater treatment and water recycling facilities. However, all of those facilities are located outside of the North San Pablo Bay Watershed and the San Francisco Bay Area Air Basin. The NBWRP would not contribute to cumulative impacts when considered with infrastructure improvements occurring outside of the watershed, due to the lack of geographic proximity.

Urban and Suburban Construction Projects

There are a variety of suburban and urban residential, commercial, and roadway projects anticipated in the Marin, Sonoma, and Napa County areas (see **Table 4-1**). These are small to moderate scale local projects. In general, short-term construction impacts and permanent land use alteration, loss of habitat, and traffic impacts are associated with these types of local development projects. These projects are examples of the increase in development and infrastructure that is allowed under the local General Plans. The timing and implementation of these projects is uncertain at this time. However, for certain issue areas such as air quality, traffic, and water resources, these projects would have the potential to contribute to cumulative impacts in the event they are implemented during the construction timeframe of the NBWRP.

Impacts Identified

Construction of these projects would be expected to generate significant but mitigable impacts to geology and soils, water quality, biological resources, land use, air quality, noise, traffic, hazardous materials, cultural resources and aesthetics. These impacts would generally be reduced to a less than significant level through mitigation measures established on a project by project basis. However, some of these impacts may remain significant and unavoidable, on a project level and/or cumulative basis.

Relationship to NBWRP

Projects constructed within the same timeframe as the NBWRP would have the potential to contribute to cumulative impacts to geology and soils, water quality, biological resources, land use, air quality, noise, traffic, hazardous materials, cultural resources and aesthetics. These impacts would generally be reduced to a less than significant level through mitigation measures established on a project by project basis; however, some of these impacts may remain significant and unavoidable. In the event that construction of these projects coincide with the implementation of NBWRP projects, they would have the potential to contribute, both individually and collectively, to cumulative impacts within the issue areas noted above.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

It is anticipated that these facilities will be constructed within the North San Pablo Bay Watershed, and within the San Francisco Bay Area Air Basin. Therefore, the NBWRP would have the potential not contribute cumulative impacts when considered with infrastructure improvements occurring within the watershed and airshed. The NBWRP's potential contribution to cumulative impacts is further discussed in **Section 4.3** below.

Regulatory and Other Cumulative Projects

303 (d) Listing of impaired waterways in Marin, Sonoma, and Napa Counties

Water quality in California is regulated on both state and local levels. Under the Clean Water Act, the U.S. Environmental Protection Agency (USEPA) is responsible for water quality management and has delegated this authority to the State Water Resource Control Board (SWRCB). Section 303(d) of the Clean Water Act requires SWRCB to identify water bodies that do not meet water quality objectives. Each state submits an updated 303(d) list biannually. The list identifies impaired waterbodies, the pollutant or stressor causing the impairment, and establishes a priority for developing a control plan, or a Total Maximum Daily Load (TMDL). A TMDL is a program that has been developed to recover 303(d) list waterbodies, and defines the total amount of material a waterbody can regularly assimilate and still maintain water quality at levels that protects beneficial uses designated for that waterbody (SWRCB, 2008). SWRCB delegates this responsibility in part to the RWQCBs. A water quality control plan and an implementation plan are developed for each water body and pollutant/stressor.

Waterways in Marin County are regulated by the San Francisco Bay RWQCB. Within the project area in Marin County, the Petaluma River, San Rafael Creek, San Antonio Creek, Gallinas Creek, and Novato Creek appear on the currently applicable 2006 303(d) list of impaired water bodies. The Petaluma River is listed for diazinon, nutrients, pathogens, sediment, and nickel. The sources of these pollutants vary by pollutant. TMDLs for the Petaluma River are scheduled to be completed from 2005 to 2019. Urban runoff and storm sewers are the potential sources of diazinon in San Rafael Creek, San Antonio Creek, Gallinas Creek, and Novato Creek.

Waterways in southern Sonoma County and the San Pablo Bay Watershed are regulated by both the San Francisco Bay and North Coast RWQCBs. Rivers and streams located within the project area that appear on the currently applicable 2006 303(d) list of impaired water bodies include Sonoma Creek and the Petaluma River. Sonoma Creek is listed for contaminated pathogens, nutrients, and sedimentation/ siltation. Potential nutrient sources include agriculture, construction/land development, and urban runoff/ storm sewers. There are separate existing TMDLs which examine the water quality problem, identify the source of water impairment, and specify actions to create solutions (RWQCB, 2007). They identify actions that, once implemented, should reduce pathogens, nutrients, and sediment and contribute to the restoration and support of fisheries. Waterways in northern Sonoma County, including the Russian and Eel Rivers, are regulated by the North Coast RWQCB. Russian River is widely impaired by sedimentation and siltation, among other pollutants as a result of agricultural practices, channel erosion, highway, road, or bridge construction, hydromodification, and a range of other potential sources. The Lower, Middle, and Upper reaches of the Eel River are impaired by sedimentation and siltation as a result of range of pollutants from a combination of sources such as grazing, silviculture, and removal of riparian vegetation, among other sources. Water temperature is also impaired as a result of erosion, hydromodification, removal of riparian vegetation, and stream bank modification.

The Napa River in Napa County is regulated by the San Francisco Bay RWQCB. The Napa River, located within the project area, appears on the currently applicable 303(d) list for nutrients, pathogens, and sedimentation/siltation. The sources of these pollutants are vary by pollutant, and are indicated in Table 3.4-1 in **Section 3.4, Water Quality**. TMDLs for the Napa River are scheduled to be completed from 2006 to 2008.

Listing of waterways outside of the North San Pablo Bay Watershed would not be anticipated to contribute to cumulative impacts, as these waterways are not tributary to North San Pablo Bay. However, recognizing that water supply is imported into the North San Pablo Bay Watershed from the Russian River Basin, listing of both the Russian River and Eel River systems as impaired, and the implementation of additional regulatory measures, including establishment of TMDLs, could alter the water quality of supplies generated in the Russian River and imported into the NBWRP service area. However, these impacts would be anticipated to be beneficial, as water quality in these systems would be improved.

Impacts Identified

Implementation of TMDLs would be anticipated to address pollutant loading in local water bodies through a number of point-source and non-point source control measures. The TMDL process is a tool for implementing water quality standards and is based on the relationship between pollutant sources and in-stream water quality conditions. The TMDL establishes the maximum allowable loadings of a pollutant that can be discharged to a water body while still meeting applicable water quality standards. The TMDL provides the basis for the establishment of water quality-based controls. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The TMDLs allocation calculation for each water body must include a margin of safety to ensure that the water body can be utilized for its State–designated uses. Additionally, the calculation must account for seasonal variation in water quality (USEPA 2002).

TMDLs are intended to address all significant stressors which cause or threaten to cause impairments to beneficial uses, including point sources (e.g., urban water discharges), nonpoint sources (e.g., runoff from fields, streets, range, or forest land), and naturally occurring sources (e.g., runoff from undisturbed lands). TMDLs may be based on readily available information and studies. In some cases, complex studies or models are needed to understand how stressors are causing water body impairment. In many cases, simple analytical efforts provide an adequate basis for stressor assessment and implementation planning. TMDLs are developed to provide an analytical basis for planning and implementing pollution controls, land management practices, and restoration projects needed to protect water quality. States are required to include approved TMDLs and associated implementation measures in State water quality management plans. Within California, TMDLs are implemented through RWQCB Basin Plans. The basin planning process has been certified as functionally equivalent to and therefore exempt from CEQA's requirement to prepare and EIR or a Negative Declaration. The RWQCB's regulations at Title 23 California Code of Regulations. § 3775 et. seq. describe the environmental documents required for planning actions. However, the implementation of TMDLs is anticipated to be largely beneficial to water quality.

Relationship to NBWRP

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Implementation of the NBWRP would reduce the amount of treated wastewater discharged into tributaries of North San Pablo Bay. As noted in **Section 3.4**, **Water Quality**, it is anticipated that this reduction in discharge would have an incremental, but beneficial, effect by reducing the volume of treated wastewater discharged to tributaries of North San Pablo Bay. Therefore, the NBWRP's contribution to potential cumulative impacts related to water quality in impaired water bodies within the North San Pablo Bay Watershed is considered beneficial.

Gravel Mining and the Aggregate Resources Mining Plan

Gravel mining is a common practice along the middle reach of the Russian River. Demand for aggregate resources is expected to remain constant for the next 20 years, but the types of resources demand is expected to change. Policies in the Aggregate Resources Mining (ARM) Plan phase out terrace pit mining and will not permit new terrace pit mining proposals after 2006, but still allow instream mining to continue. There are currently 18 terrace sites, however implementation of the ARM Plan limits extraction to a sustainable level. The Sonoma County ARM Plan, adopted in 1981 and updated in 1994 is a document that provides the regulatory guidelines for management of aggregate mining. It consisted of a program EIR on rock and gravel mining within the County, and a specific management plan to regulate those resources. The ARM Plan includes:

- the Aggregate Mining Plan: lands available for future supplies of aggregate material
- Managed Resources/ Open Space Plan: protection of riparian habitats, reclamation, and agricultural land preservation
- Identification of mining operations, including terrace mining, carried out in flood plain

Impacts Identified

Gravel mining causes environmental impacts like erosion, incision of tributaries, and channelization.

Relationship to NBWRP

The ARM Plan may propose to continue, reduce, or eliminate mining of gravel and sand aquifer and terraces of the Russian River. All mining activities would occur outside of the North San Pablo Bay Watershed. However, recognizing that water supply is imported into the North San Pablo Bay Watershed from the Russian River Basin, implementation of gravel mining under the ARM Plan could affect water quality of supplies imported into the North San Pablo Bay Watershed.

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation.

Implementation of AB 2121 - Policy for Maintaining Instream Flows

To protect flows that support threatened and endangered anadromous fish, National Marine Fisheries Service (NMFS) and the CDFG jointly developed "Guidelines for Maintaining Instream Flows to Protect Fisheries Resources Downstream of Water Diversions in Mid-California Coastal Streams" for new applications in 2002. On September 30, 2004, the Legislature responded to pressure from conservation groups and enacted Water Code section 1259.4 [AB 2121 (Stats. 2004, Ch. 943, §§1-3)], which requires the SWRCB to adopt a policy for principles and guidelines to maintain instream flows in coastal streams within the counties of Marin, Sonoma, Napa, Mendocino and Humboldt by January 2008. The geographic scope also includes the Mattole River to San Francisco and coastal streams entering North San Pablo Bay. Shortly after AB 2121 was signed, two conservation groups, Trout Unlimited and Peregrine Audubon society filed a petition to assist the SWRCB in implementation. To satisfy AB 2121 commitments, SWRCB developed Resolution 2005-0070, and drafted the "Policy for Maintaining Instream Flows" (2007).

The purpose of the instream flow requirements established under this policy is to protect native fish populations and fishery resources. By implementing seasonal limits on diversions, minimum bypass flow requirements, and limits on maximum cumulative diversions rights within a watershed, the policy encourages more natural hydrograph responses, which would be more conducive to the survival of anadromous fish. The SWRCB will consider whether to include enforcement provisions in the AB 2121 streamflow protection policy.

Identified Impacts

It is anticipated that the policy would increase wintertime flow and duration in local streams by requiring a minimum bypass flow at local diversion points. This would have beneficial impacts on biological resources, riparian habitat, fisheries, water quality and water resources.

Relevance to NBWRP

Wastewater generated within the North San Pablo Bay Watershed is collected, treated, and discharged to North San Pablo Bay by four WWTPs. The NBWRP would recover treated effluent prior to its release, treat that water to Title 22 standards, and distribute it for irrigation uses to offset the use of potable supplies for irrigation. As such, it would have a beneficial effect by reducing irrigation demands on Russian River, groundwater, and local surface water supplies that are currently used for irrigation. This includes local surface water supplies that are impounded from streams and used for irrigation. Provision of recycled water by the NBWRP would provide recycled water offset for supplies that may currently be diverted from instream flow. As such, the

NBWRP would have a beneficial contribution to cumulative increases in instream flow associated with implementation of AB 2121.

Title XVI Water Reuse Program

The United States Bureau of Reclamation's (Reclamation) Title XVI Water Reuse Program, was established in response to droughts for six consecutive years during the 1980s and 1990s in the western United States. Under Title XVI, the Secretary of the Interior is responsible for identifying opportunities for water reuse. The purpose of Title XVI is to supplement the water supply by reclaiming, recycling and reusing water from agricultural drainage, wastewater, or other low quality water supplies. Municipal and irrigation district projects in the seventeen western states are eligible for Title XVI funding. An original rationale was to help Southern California reduce their reliance on Colorado River water. There are 33 projects under Title XVI, mainly concentrated in Southern California, but also located in Northern California. A feasibility study for each project must be approved by the Secretary of the Interior prior to enrollment in the program. Projects are approved and evaluated on an individual basis, and they are eligible for federal grants for a maximum of $20 million or up to 25 percent of the total project cost. Participation in Title XVI grants the authority to design and construct reclamation and reuse facilities, and deliver water for irrigation, groundwater recharge, wildlife enhancement, industrial, and recreational purposes. This is only the active federal program providing local municipalities and irrigation districts with financial and technical assistance for the design and operation of recycled water facilities. Other funding is available through the Clean Water Act and the Safe Drinking Water Act State Revolving Fund.

Relationship to NBWRP

NBWRP is within the Bureau of Reclamation's Title XVI Program, and as such, is eligible for funding under the program. Reclamation has established guidelines for implementing the Title XVI program and applying it to projects. This process will be used by Reclamation in distributing funds under Title XVI. The level of available funding is established by Congress, and is not unlimited. Therefore, each of the projects that are funded, will, by definition of the Title XVI program, affect the availability of funding for other projects.

In the event other projects are not funded, this could contribute to two general cumulative effects relating to these other projects. First, the construction and operational impacts of these projects would be avoided. Second, the beneficial impacts of these projects, primarily related to offset of potable water supplies through the use of recycled water, would not occur. It should be noted that participation in the Title XVI program by NBWRA does not preclude other projects from being funded under Title XVI, at the discretion of Reclamation and the U.S. Congress. As such, although authorization and appropriation of funds to NBWRA Member Agencies could, by definition, reduce the amount of funding available under the Title XVI for other projects, such appropriations, both individually and cumulatively, are subject to the discretionary action of the Reclamation and the U.S. Congress. Therefore, the NBWRP's contribution to this cumulative effects is no less, and no greater, than any other project participating in the program. Therefore, this contribution is not cumulatively considerable.

4.3 Description of Cumulative Effects

This section reviews the potential cumulative effects of constructing the NBWRP concurrently with other Sonoma, Napa, and Marin County projects. Additionally, the geographic scope of potential cumulative impacts varies by issue area, and is defined below. Since the Action Alternatives represent incremental development of recycled water facilities, the cumulative impact analysis is based on the "worst case scenario" of all of the increments combined. For example, the cumulative impacts associated with construction will increase incrementally with each alternative.

4.3.1 Construction Related Impacts

Impacts 4-1: Construction-related Cumulative Impacts. Concurrent construction of several projects within the Sonoma, Napa, and Marin County areas could result in cumulative short-term impacts associated with construction activities. If implemented at the same time as other construction projects, construction of facilities under all three of the alternatives could contribute to potential short-term cumulative effects associated with erosion, cultural resource disturbance, disturbance of adjacent land uses, traffic disruption, dust generation, construction noise, aesthetics, air quality, biological resources, hazardous materials, water quality, public services and utilities. However, construction-related impacts would not result in long term alteration of the environment, and could be mitigated to less than significant levels through the use of mitigation measures identified throughout Chapter 3. (Less than Significant with Mitigation)

Construction of the specific facilities under the selected alternative would potentially coincide with other proposed infrastructure projects in the project area. Due to their short-term nature, and the inclusion of appropriate mitigation measures as established in **Chapter 3.0**, NBWRP's contribution to cumulative impacts is not considerable. The following discussion reviews construction related impacts, and the potential cumulative contribution of both the Proposed Action, and the other projects identified within the Sonoma, Napa, Marin County area.

Water Quality

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** could result in increased erosion and subsequent sedimentation and stormwater pollution, with impacts to water quality in downstream water bodies and/or storm drain capacity. In particular, degradation of surface waters could result from construction activities, including construction of pipelines, pump stations, storage, and WWTP improvements. Additionally, discharge of groundwater, release of fuels, or release of other hazardous materials associated with construction activities could degrade water quality.

SWRCB has issued a General NPDES Permit to address potential impacts related to construction activities. This General Permit has been issued to ensure that individual projects implement its fair share of mitigation measures designed to alleviate cumulative impacts to water quality. The General Permit mandates that projects disturbing greater than one acre develop and implement a

Storm Water Pollution Prevention Plan (SWPPP) identifying BMPs to reduce erosion of disturbed soils and release of hazardous materials into water courses. Preparation of the SWPPP and compliance with the measures identified in the SWPPP would ensure compliance with state regulatory policies to minimize the potential for water quality impacts from construction activities associated with the proposed project. As such, the potential contribution to water quality impacts associated with the proposed project would be rendered less than cumulatively considerable through implementation of **Measures 3.4-1a** as identified in **Section 3.4, Water Quality** and **Mitigation Measure 4.1a** below.

Biological Resources

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** could result in temporary impacts to biological resources in the project area. Potential impacts during construction include temporary disturbance and/or permanent loss of wetlands and other Waters of the United States (U.S.), under regulatory jurisdiction of the USACE (CWA Section 404), RWQCB (CWA Section 401), and CDFG (Fish and Game Code Section 1601-1616). These impacts are limited to areas along the recycled water pipelines and at the proposed storage reservoir sites. Potential jurisdictional features are identified in **Section 3.5, Biological Resources**.

Impacts to Western Pond turtle, California red-legged frog, Chinook, and steelhead could occur during construction operations. Construction could also temporarily impact nesting habitat for golden eagle and Swainson's hawk. Additional impacts due to construction would affect common plant and animal species. All of these impacts will be mitigated to a less than significant level upon project completion by the implementation of mitigation measures in **Section 3.5, Biological Resources** and **Mitigation Measure 4.1a** below. As such, NBWRP's contribution to short-term impacts to biological resources would not be cumulatively considerable.

Land Use

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** could temporarily generate noise, dust, visual intrusion, and construction traffic as well as street and access disturbance that could affect adjacent land uses. The sensitive receptors that are adjacent to components of the proposed project include single- and multi-family residences, schools, and churches (See **Section 3.9, Noise, Section 3.7 Traffic,** and **Section 3.8 Air Quality**). The NBWRP's contribution to this cumulative disturbance includes construction activities associated with the recycled water pipeline construction, excavation for the operational and capacity storage reservoirs, and grading and construction for booster pump stations. As noted in **Section 3.6, Land Use, Planning and Recreation**, this construction related disturbance to surrounding land uses would not be considered significant on an individual project basis, due to the temporary nature of construction activities, and the mitigation measures identified in **Section 3.6, Land Use Planning and Agriculture**, to minimize these impacts to the degree feasible. When considered in combination with the other Sonoma, Napa, and Marin

County area projects identified, the proposed project's disturbance of land uses adjacent to the project area would not result in a cumulatively considerable contribution.

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would also result in the temporary disruption of recreational resources, such as parks and bikeways, due to noise and construction traffic as described in **Section 3.13, Recreation**. Construction of pipelines would occur primarily in roadway right-of-ways along existing bike trails. The disruption to such recreational facilities would be temporary, as the pipeline network would be underground and surface restoration after construction would return disrupted areas to their original condition. Temporary disturbances would be mitigated to a less than significant level with the mitigation identified in **Chapter 3.0** and **Mitigation Measure 4.1a** below. As such, the contribution of the proposed project to cumulative recreational resource impacts would not be considerable.

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would also result in the temporary disruption of agricultural resources, as identified by the Farmland Mapping and Monitoring Program. Construction of the project would disturb, directly and indirectly, Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Grazing Land, and farmland under Williamson Act contract. Due to the nature of this disturbance, however, the adverse cumulative impact is less than significant. Over the long term, there is potential for a beneficial cumulative impact related to agricultural production as a result of availability of a more sustainable water supply that would be more resilient during drought conditions.

Transportation and Traffic

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would intermittently and temporarily generate increases in: vehicle trips by construction workers and construction vehicles on area roadways, traffic delays, and potential traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways. Construction may temporarily restrict access for general traffic and emergency vehicles, will increase parking demands in the vicinity of the project and may cause permanent damage to road pavement. Construction–related impacts to traffic associated with the NBWRP would be short-term. As identified in **Section 3.7, Transportation and Traffic**, the proposed pipeline routes may directly overlap with projects that would occur along roadways identified in **Table 4-1**, including roadway improvements proposed by Sonoma County Transportation and Public Works Department (State Route 12, Adobe Road); Caltrans (Duhig Road); City of Napa (various roadways); and the City of Novato Public Works Department (Olive Avenue, Diablo). The cumulative impact on traffic could be significant. This impact would be reduced to less-than-significant levels by implementation of **Mitigation Measure 4.1a**. Further, as noted in **Section 3.7, Transportation and Traffic**, implementation of mitigation measures described in

Section 3.7, including preparation of a Traffic Control Plan, would reduce potential impacts to a less than significant level. Therefore, NBWRP contribution to construction traffic impacts would not be cumulatively considerable.

Air Quality

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. The project could also generate greenhouse gas (GHG) emissions; including those associated with construction equipment, increases in vehicle traffic, and secondary operational increases resulting from electricity use would overlap with similar sources of GHG emissions from other projects. These potential impacts contribute to overall impacts to the San Francisco Bay Area air basin in which the project is located. As described in **Section 3.8, Air Quality**, the Bay Area air basin is classified as non-attainment for State PM10 and PM2.5[5] standards as well as State 1- and 8-hour ozone standards. With respect to federal standards, the BAAQMD is classified as marginal non-attainment for the 8-hour ozone standard, which is treated as a significant cumulative impact for purposes of this analysis. However, as discussed below and in **Section 3.8, Air Quality,** increases in air pollutant and GHG emissions from these sources associated with NBWRA projects would be minimal, and the contribution from NBWRP would not result in a significant increase in cumulative GHG emissions.

Project construction would generate particulate matter and other criteria pollutants, primarily through excavation activities, construction equipment exhaust, haul truck trips, and related construction worker commute trips. This impact would be temporary on a local level, lasting through the duration of the project. Construction activities for this project would occur in the immediate vicinity of the facility site under excavation at a given time. As indicated above, emissions from construction vehicles will potentially impact nearby residential uses. On a regional level, emissions resulting from vehicles associated with the project would incrementally add to regional atmospheric loading of ozone precursors during the short-term construction period. BAAQMD Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are not expected to impede attainment or maintenance of ozone standards in the Bay Area (BAAQMD, 1999). Similarly, mitigation will be required to control respirable particulate matter (PM10) emissions rendering their impacts less than significant. As the BAAQMD's emissions inventory and associated regional air quality plan account for construction-related emissions of criteria pollutants, they are not expected to impede attainment or maintenance of ozone or carbon monoxide standards in the Bay Area. As such, the potential contribution to air quality impacts associated with the Project would be rendered less than cumulatively considerable through implementation of **Measures 3.8-1a and 3.8-1b** identified in **Section 3.8, Air Quality** and **Mitigation Measure 4.1a** below.

[5] Particulate matter that have a size 10 microns and 2.5 microns.

Noise

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would generate short-term noise associated with construction equipment and construction traffic. Construction activities are anticipated to temporarily and intermittently raise noise levels above ambient levels. With implementation of **Mitigation Measure 4.1a** below and mitigation measures identified in **Section 3.8, Noise,** the proposed project's contribution to noise impacts would be rendered less than cumulatively considerable.

Public Services and Utilities

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** could result in temporary, planned or accidental disruption to utility services, and require short-term police and fire protection services to assist in traffic management or in the event of an accident. No effects to utility customer service are anticipated; therefore, the proposed project would not contribute to cumulative effects related to utilities.

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** would have the potential to contribute to service demands for police and fire services in the event of an accident. For NBWRP, this need would be limited to safety inspection and fire-suppression during construction. Construction of the recycled water pipelines would be primarily limited to existing right-of-way, but could involve temporary road closures, lane closures, and other traffic controls that could interfere with an adopted emergency response plan or emergency evacuation plan. No long-term public service needs would be associated with project implementation, and no permanent road closures would be required. Implementation of mitigation measures in **Section 3.11, Public Services and Utilities**, and **Mitigation Measure 4.1a** below would reduce impacts to utilities and emergency service providers to less than significant. As such, the NBWRP's contribution to the potential for disruption to public services would not be cumulatively considerable.

Hazardous Materials

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** could result in an increase in risk of exposure (human and the environmental) to hazardous materials, including through excavation, spills or releases. As identified in **Section 3.10, Hazardous Materials**, this potential is considered low, given review of available information and existing land uses along the pipeline corridor and at facility site locations. Implementation of mitigation measures in **Section 3.10, Hazardous Materials**, and **Mitigation Measure 4.1a** below will reduce potential impacts to a less than significant level on a project basis. As such, the NBWRP's contribution to the potential for disturbance of hazardous materials would not be cumulatively considerable.

Aesthetics

Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area (**Table 4-1**) and other water and wastewater infrastructure projects identified in **Section 4.2.4** located within the same viewsheds would result in short-term visual impacts during construction. Construction activities would require the use of heavy equipment and storage of materials at the construction zone. During construction, excavated trenches and stockpiled soils, pipe, and other materials within the construction easement would constitute negative aesthetic elements in the visual landscape that would directly affect the area. The NBWRP would result in the temporary disturbance of views along roadways and of agricultural fields during pipeline construction

Excavated trenches, stockpiled soil, and other materials within the construction area would constitute negative aesthetic elements in the visual landscape. As noted in **Section 3.14, Aesthetics**, these impacts would be temporary during project construction, and would not be considered significant on a project basis. Following construction, the recycled water pipelines would be located entirely below-ground and would be visually unobtrusive. Pumping stations would be located below grade to the degree feasible, and integrated with the surrounding visual character. Improvements to provide tertiary treatment and storage would occur onsite at existing WWTPs, and would not alter the existing visual character of those facilities. Disturbed areas will be restored to their previous state upon project completion. Due to the limited nature of these improvements, views from residential areas and recreational facilities would not be adversely affected. Implementation of **Measure 3.14.1a** and **Mitigation Measure 4.1a** below would reduce long-term visual impacts to less-than-significant levels. As such, the NBWRP's contribution to the potential for disruption to visual resources and would not be cumulatively considerable.

Mitigation Measures

Mitigation Measure 4.1: Member Agencies shall coordinate construction activities along selected alignments to identify overlapping pipeline routes, project areas, and construction schedules. To the extent feasible, construction activities shall be coordinated to consolidate the occurrence of short-term construction-related impacts.

Impact Significance after Mitigation: Less than Significant.

4.3.2 Long-Term Impacts

Impact 4.2: Cumulative Long-term Impacts resulting from Seismic Events. Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area and other water and wastewater infrastructure projects could result in cumulative long-term risk of upset impacts related to groundshaking and surface fault rupture during major earthquakes. (Less than Significant)

Components of the NBWRP could be exposed to damage from earthquakes and geologic hazards. In the event of a catastrophic failure, areas downstream of pipelines or storage facilities could

experience localized flooding. Groundshaking and surface fault rupture during major earthquakes on nearby active faults could cause structural damage or collapse of facilities. Ground failure, including slope failure, differential settlement, loss of bearing strength, could occur beneath facilities, resulting in structural or mechanical damage and secondary effects related to recycled water release.

The project area is situated along the Rodgers Creek Fault, which is anticipated to experience significant seismic activity by 2032 (Rodgers, 2006). Failure of facilities that are built as part of the NBWRP, in conjunction with the failure of other projects in the area, could result in potential disruptions to irrigation supplies. Considering that geohazards are unavoidable and unpredictable, NBWRP facilities would to be exposed to damage from earthquakes and geologic hazards. Implementation of standard design criteria and appropriate design measures, would reduce this impact to less than significant. Therefore, the NBWRP's contribution to this impact would not be cumulatively considerable.

Impact 4.3: Cumulative Long-term Impacts on Water Resources. Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area and other water and wastewater infrastructure projects could result in cumulative long-term impacts to water resources, water quality, and flooding. (Less than Significant)

Construction of the NBWRP, concurrent with other projects with Sonoma, Napa, and Marin Counties, and other water and wastewater infrastructure projects occurring within the North San Pablo Bay Watershed, would potentially contribute to surface water, water quality, and flooding impacts due to alterations of drainage patterns and increases in impervious surface areas. Increases in impervious surface area would be limited to treatment facilities and pump stations at existing WWTPs, which would be integrated into existing drainage infrastructure. Pump stations located along proposed pipeline routes would be limited to 1,000 square feet per facility. These facilities would not substantially contribute to runoff within the watershed during storm events. Therefore, the NBWRP's contribution to cumulative impacts to water resources, water quality, and flooding are not cumulatively considerable.

Implementation of NBWRP would reduce the amount of treated effluent discharged to tributary to the North San Pablo Watershed. This would have an incremental, but beneficial cumulative impact on water quality in receiving waters.

Implementation of NBWRP would offset the use of potable water supplies for irrigation, including imported surface water supplies, groundwater, and local surface water supplies. This would have a beneficial cumulative impact on water supply.

Impact 4.4: Cumulative Long-term Impacts on Groundwater. Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area and other water and wastewater infrastructure projects could result in cumulative long-term impacts to groundwater resources and groundwater quality. (Less than Significant)

Construction of the NBWRP, concurrent with other projects with Sonoma, Napa, and Marin Counties, and other water and wastewater infrastructure projects occurring within the North San Pablo Bay Watershed, would potentially contribute to alterations in groundwater due to increases in impervious surface areas and offset of groundwater supplies used for irrigation. Increases in impervious surface area would be limited to treatment facilities and pump stations at existing WWTPs, which would be integrated into existing drainage infrastructure. Pump stations located along proposed pipeline routes would be limited to 1,000 square feet per facility. These facilities would not substantially alter groundwater recharge areas. Therefore, the NBWRP's contribution to cumulative impacts to groundwater recharge are not significant.

Implementation of the NBWRA would offset the use of potable water supplies for irrigation, including imported surface water supplies, groundwater, and local surface water supplies. As identified in **Section 3.3, Groundwater Resources,** this would have a beneficial cumulative impact on groundwater pumping, particularly in the MST Area and Sonoma Valley.

Impact 4.5: Cumulative Long-term Impacts on Biological Resources. Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area, and other water and wastewater infrastructure projects, could result in cumulative long-term impacts to biological resources. (Less than Significant with Mitigation)

Sensitive Marsh Bird and Mammal Species

The SVCSD Napa Salt Pond Pipeline has the potential to impact marsh habitat for California black rail, California clapper rail, and western snowy plover. As noted in **Section 3.5, Biological Resources**, implementation of **Option B** for the SVCSD Napa Salt Pond Pipeline would substantially reduce the potential for these impacts, by implementing a route that would avoid marshland areas along the majority of its route. Construction of pipeline from the existing parking area on Duerig Road to the outfall location (approximately 0.7 miles) would still have the potential for short-term construction related impacts to sensitive marsh bird and mammal species. Implementation of **Mitigation Measures 3.5.7** established in **Section 3.5, Biological Resources**, which includes avoidance of the nesting season (February 1 through September 14), minimization of impact area, pre-construction survey, construction crew training, and construction monitoring, would reduce potential impacts to sensitive marsh bird species to a less than significant level. Similarly, implementation of **Mitigation Measures 3.5.10** established in **Section 3.5, Biological Resources**, which includes minimization of the construction area, establishment of exclusion fencing, clearance of the construction area though pre-construction trapping and relocation of salt marsh harvest mice and ornate shrew individuals, construction crew training, and construction

monitoring, would reduce potential impacts to a less than significant level. Permanent loss of potential marsh bird and mammal habitat for the NBWRP would be limited to the construction of the pipeline from the existing roadway to the outfall structure, estimated at 2,000 square feet (0.04 acre), and the outfall area, estimated to be approximately 400 square feet (0.01 acre). As necessary, compensatory mitigation would be established as part of the USACE 404 Permit and CDFG 1600 permitting processes.

Other projects within the Napa Salt Pond area could also contribute to disruption or loss of salt marsh habitat, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of salt marsh impacts. Due to the limited potential NBWRP's temporary and permanent impacts, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to impacts to marsh habitat for California black rail, California clapper rail, and western snowy plover would be rendered less than cumulatively considerable.

Burrowing Owl and Nesting Birds

The burrowing owl is a federal Species of Concern and California Species of Special Concern, and use grassland areas with ground squirrel burrow associations. NBWRP pipelines, including LGVSD and SVCSD pipelines, would have the potential to impact habitats used by burrowing owls. Facility construction would also have the potential to temporarily impact raptors and nesting birds protected under the California Fish and Game Code and the federal Migratory Bird Treaty Act. Implementation of **Mitigation Measures 3.5.8 and 3.5.9** established in **Section 3.5, Biological Resources**, which includes avoidance of the nesting season (February 1 through August 31), minimization of impact area, pre-construction survey, construction crew training, and construction monitoring, would reduce potential temporary impacts to a less than significant level.

Other projects within the North San Pablo Watershed could also contribute to disruption or loss of burrowing owl habitat and nesting bird habitat, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of habitat. Due to the limited potential NBWRP's temporary impacts, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to impacts to burrowing owl, raptors, and nesting birds protected under the California Fish and Game Code and the Migratory Bird Treaty Act would be rendered less than cumulatively considerable.

Sensitive Mammal Species

The NBWRP has the potential to impact habitat for sensitive bat species, primarily at bridge crossings of streams, and American badger habitat, which can occur along pipeline routes and facility locations. Implementation of **Mitigation Measures 3.5.11** established in **Section 3.5, Biological Resources**, which includes pre-construction survey and avoidance of roosts, would reduce potential impacts to sensitive bat species to a less than significant level. Similarly,

implementation of **Mitigation Measures 3.5.12** established in **Section 3.5, Biological Resources**, which includes pre-construction survey and passive relocation of badger dens that may occur along pipeline or facility locations, would reduce potential temporary impacts to a less than significant level.

Other projects within the North San Pablo Watershed could also contribute to disruption or loss of sensitive bat species or American badgers, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of habitat. Due to the limited potential NBWRP's temporary impacts, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to sensitive bat species and American badger would be rendered less than cumulatively considerable.

Sensitive Plant Species and Heritage Trees

The NBWRP has the potential to impact the following listed and special-status plants, which have been identified as having at least a low potential to occur in the NBWRP area: Sonoma sunshine, soft bird's beak, Contra Costa goldfields, two-fork clover, franciscan onion, Napa false indigo, Mt. Tamalpais manzanita, narrow-anthered California brodiaea, Point Reyes bird's beak, dwarf downingia, Napa western flax, delta tule pea, legenere, Mason's lilaeopsis, Suisun marsh aster, saline clover, and oval-leaved viburnum. Additionally, construction of facilities may impact heritage trees as defined by County tree ordinances. Implementation of **Mitigation Measures 3.5.13 and 3.5.14** established in **Section 3.5, Biological Resources**, which includes pre-construction survey, avoidance, restoration, and compensatory mitigation as appropriate, would reduce potential impacts to rare plant species to a less than significant level.

Other projects within the North San Pablo Watershed could also contribute to disruption or loss of rare plant habitat and heritage trees, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of habitat. Due to the limited potential for NBWRP's temporary impacts, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to impacts to rare plants and heritage trees would be rendered less than cumulatively considerable.

Wetland Habitat

The NBWRP Phase 1 would have the potential to impact 71 drainages; of these 54 are unnamed tributaries, most of which are likely to be ephemeral drainages that are dry most of the year. It is estimated that implementation of Phase 1 would result in temporary impact to 0.52 acres of jurisdictional wetland, and 2.8 acres of CDFG jurisdictional features. Under the Fully Connected System, 213 drainages would have the potential to be affected.

Implementation of projects within the North San Pablo Bay Watershed would have the potential to impact wetland features. These projects have completed or will be required to complete the

appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of wetlands and sensitive habitats.

Due to the loss of wetland habitat, implementation of the NBWRP Phase 1 would contribute to the cumulative temporary disturbance of jurisdictional wetlands (0.5 acres) and associated riparian area (2.8 acres). As required by **Measure 3.5.1**, design measures would be incorporated to avoid wetland impacts the extent feasible, either through avoidance or through use of trenchless technology. As necessary, compensatory mitigation would be established as part of the USACE 404 Permit and CDFG 1600 permitting processes. Due to the limited wetland loss, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to wetland loss would be rendered less than cumulatively considerable.

CRLF and Western Pond Turtle

As noted above, implementation of the NBWRP Phase 1 would have the potential to affect 71 drainages, with potential impacts to California red-legged frog and western pond turtle upland and aquatic habitats. As noted above, **Measure 3.5.1** requires that design measures be incorporated to avoid wetland impacts the extent feasible, either through avoidance or through use of trenchless technology. Therefore, it is anticipated that temporary impacts to habitat for these species at stream crossings would be avoided. As necessary, compensatory mitigation would be established as part of the USACE 404 Permit and CDFG 1600 permitting processes. Due to the limited impacts to stream crossings, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of the NBWRP to temporary impacts to California red-legged frog and western pond turtle upland and aquatic habitats species, would be rendered less than cumulatively considerable.

Special Status Fish, Invertebrates and California Freshwater Shrimp

As noted above, implementation of the NBWRP Phase 1 would have the potential to affect 71 drainages, with potential impacts to special-status fish species and California Freshwater Shrimp. Construction of Proposed Project facilities could affect special-status invertebrate or fish species including central California coast steelhead, Chinook salmon, California freshwater shrimp, Pacific lamprey, and Sacramento splittail, or designated critical habitat for steelhead. Additionally, habitat areas for Riksecker's water scavenger beetle and California brackishwater snail could be affected. As noted above, **Measure 3.5.1** requires that design measures be incorporated to avoid wetland impacts the extent feasible, either through avoidance or through use of trenchless technology. Therefore, it is anticipated that temporary impacts to habitat for these species at stream crossings would be avoided. As necessary, compensatory mitigation would be established as part of the USACE 404 Permit and CDFG 1600 permitting processes. Due to the limited impacts to stream crossings, and the mitigation measures established in **Section 3.5, Biological Resources**, the contribution of NBWRP to temporary impacts to sensitive fish species, sensitive invertebrate species and California freshwater shrimp would be rendered less than cumulatively considerable.

Long-term operation impacts of NBWRP would include the reduction of treated effluent discharge into tributaries of North San Pablo Bay. When considered with other discharge inputs into North San Pablo Bay, both from point and non-point sources, this is anticipated to have an incremental, but beneficial, impact to water quality and sensitive species habitat. Therefore, the NBWRP's contribution to cumulative impacts to sensitive fish species, special status invertebrate species, and California freshwater shrimp habitat is less than significant.

Mitigation Measures

Mitigation Measures in **Section 3.5, Biological Resources**.

Impact Significance after Mitigation: Less than Significant.

Impact 4.6: Cumulative Long-term Impacts on Land Use. Concurrent construction of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area and other water and wastewater infrastructure projects could result in cumulative long-term impacts to land use and agricultural resources. (Less than Significant)

The NBWRP has the potential to impact farmland designated as prime, statewide importance, and unique. Implementation of pipelines, pump stations, and storage facilities would have the potential for temporary, or in some cases, permanent loss of agricultural lands. As discussed in Section 3.6, Land Use and Agricultural Resources, it is anticipated that these impacts can be avoided through siting of facilities in previously disturbed areas, such as roadways. Implementation of **Mitigation Measures 3.6.3** established in **Section 3.6, Land Use and Agricultural Resources**, which includes measures to avoid permanent impacts to farmlands associated with pipeline installation.

Other projects within the North San Pablo Watershed could also contribute to disruption or loss of farmlands, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset loss of farmlands. Implementation of the NBWRP would provide recycled water as an irrigation supply to offset potable surface and groundwater supplies currently used for this purpose. Recycled water represents a reliable, local and drought-proof irrigation supply that supports the long-term viability of all agricultural practices within the region. Due to the limited potential for NBWRP's temporary impacts, and the mitigation measures established in **Section 3.6, Land Use and Agricultural Resources**, the contribution of the NBWRP to impacts regarding the loss of farmlands would be rendered less than cumulatively considerable.

Impact 4.7: Cumulative Impacts from Greenhouse Gas Emissions. Concurrent operation of the NBWRP with other projects could result in a cumulatively considerable net increase in GHG emissions or criteria pollutants for which the region is in non-attainment under applicable standards. (Less than Significant)

Greenhouse Gases. NBWRP would result in long-term emissions associated with distribution of recycled water. As noted in Section 3.8, Air Quality, the California Air Resources Board (CARB) has recommended that industrial projects that meet interim CARB performance standards for construction and transportation emissions, and emit no more than 7,000 metric tons of CO_2e per year from non-transportation related GHG sources, should be presumed to have a less than significant impact related to climate change, which is a global cumulative impact issue. Non-transportation sources include combustion related components/equipment, process losses, purchased electricity, and water usage and wastewater discharge (CARB, 2008f). As discussed in **Section 3.8, Air Quality,** Phase 1 GHG emissions are estimated at 531 tons CO_2e, and Fully Connected Alternative GHG emissions are estimated at 979 tons CO_2e. Emissions from implementation of the NBWRP would be well below CARB's interim GHG threshold of 7,000 metric tons of CO_2e per year.

Other projects within the State would also contribute to GHG emissions, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or offset GHG emissions. Implementation of the NBWRP would provide recycled water as an irrigation supply to offset potable surface and groundwater supplies currently used for this purpose. Due to the limited nature of NBWRP's GHG emissions, and the mitigation measures established in **Section 3.8, Air Quality**, the contribution of NBWRP to the significant cumulative impact associated with GHG emissions would not be considered cumulatively considerable.

Criteria Pollutants. As demonstrated in **Table 4-1,** there are a number of projects in the area that would overlap with implementation of NBWRP. However, according to the *BAAQMD CEQA Guidelines*, a project's cumulative impact on air quality is considered less than significant if it does not have an individually significant operational air quality impact and it is consistent with the local general plans as well as the regional air quality plan (BAAQMD, 1999). As demonstrated in **Section 3.8, Air Quality**, NBWRP would not result in significant increases in long-term emissions of criteria pollutants. As such, the proposed project would not conflict with an applicable local or regional air quality plan and would not be cumulatively considerable. Cumulative impacts related to criteria pollutants would be less than significant.

Impact 4.8: Cumulative Long-term Impacts on Cultural and Historic Resources. Concurrent operation of the NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area and other water and wastewater infrastructure projects could result in cumulative long-term impacts to cultural resources. (Less than Significant)

NBWRP has the potential to for long-term impacts related to the loss of cultural resources and historical resources. Implementation of pipelines, pump stations, and storage facilities would have the potential to result in the permanent loss of cultural resources. As discussed in **Section 3.12, Cultural Resources**, it is anticipated that these impacts can be avoided through siting of facilities in previously disturbed areas, such as roadways. Implementation of **Mitigation Measures 3.12.1 and 3.12.2** established in **Section 3.12, Cultural Resources**, which includes measures to avoid permanent impacts to cultural resources associated with facility installation.

Other projects within the North San Pablo Watershed could also contribute to disruption or loss of historic sites or archaeological remains, if implemented. These projects have completed or will be required to complete the appropriate level of CEQA compliance and permitting, including the establishment of mitigation measures to minimize or avoid impacts to cultural resources. Due to the limited potential for NBWRP's temporary impacts, and the mitigation measures established in **Section 3.12, Cultural Resources**, the contribution of NBWRP to impacts regarding the loss of cultural resources would be rendered less than cumulatively considerable.

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CHAPTER 5
Growth Inducement and Secondary Effects of Growth

5.1 Introduction

The California Environmental Quality Act (CEQA) Guidelines (§15126.2(d)) require that an Environmental Impact Report (EIR) evaluate the growth inducing impacts of a proposed action. The EIR should:

> *Discuss the way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

Under the National Environmental Policy Act (NEPA), it is U.S. Bureau of Reclamation (Reclamation) policy to encourage and facilitate the most efficient beneficial use of project water and thus, to encourage changes that implement these policies, consistent with the Reclamation water management mission. Proposals for changes in water use reflect ongoing trends of greater efficiencies in agricultural water use. A NEPA review is required to identify the likely environmental consequences of such proposals, and this information must be considered in Reclamation decision-making. In assessing the environmental impacts of changes in water use, numerous issues arise, including: What is the relationship of water supply and urban population growth? Is the change growth inducing, or are we simply accommodating unavoidable demographic trends by providing a relatively impact-free source of water? How far, and to what degree, do we follow the impacts that are associated with the newly approved water use?

According to the NEPA Handbook, one way to determine if the change in water use will cause growth is to prepare an Environmental Assessment to assist Reclamation in determining whether the urban growth is a consequence of the project water supply, or whether the growth would occur anyway, even in the absence of the project water. If comparable quantities of alternative water supplies are reasonably available (as supported by appropriate documentation), then the "future without" scenario is probably very similar to the proposed action with respect to

population growth issues. This can be documented in the "no action" ("future without") alternative, eliminating the need for a detailed discussion of issues and impacts which are not a consequence of the Federal action at issue. In situations in which it is clear that growth is a result of the provision of project water ("but for" the provision of project water, this growth would not occur), and these impacts can be attributed to the Federal action, detailed descriptions of the impacts must be provided in the NEPA document.

A project can have direct and/or indirect growth inducement potential. Direct growth would result if a project involved construction of new housing. A project can have indirect growth inducement if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. A project would also have an indirect growth inducement effect if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service.

Based on the CEQA and NEPA discussions above, assessing the growth-inducement potential of the North Bay Water Recycling Program (NBWRP or proposed project) involves answering the question: "Would implementation of the proposed project directly or indirectly support economic expansion, population growth, or residential construction?" Water supply is one of the chief, though not the only, public services needed to support urban development. A water service capacity deficiency could constrain future development, particularly if coupled with strong community policy. Adequate water supply, treatment, and conveyance would play a role in supporting additional growth in the project area, but it would not be the single impetus to such growth. Factors such as the General Plans and policies of the cities and counties and/or the availability of wastewater disposal capacity, public schools, and transportation services also influence business and residential or population growth in the planning area. Economic factors, in particular, greatly affect development rates and locations.

Growth induced from a project may result in adverse impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service and solid waste service. The urban development may have environmental impacts, as identified in CEQA documents prepared for adoption of local land use plans. A project that would induce "disorderly" growth that is in conflict with local land use plans could indirectly cause additional adverse environmental impacts and impacts to other public services. Thus, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

5.2 Growth-Inducement Potential

5.2.1 Direct Growth-Inducement Potential

To determine direct growth inducement potential, the proposed project was evaluated to verify whether an increase in population or employment, or the construction of new housing would occur as a direct result of the project. Construction of the proposed project would involve short-term workers for the course of the construction activities. Operation of the proposed project would not involve a substantial change in the existing operation and maintenance activities of the existing wastewater treatment plants or other facilities of the Member Agencies. Therefore, the proposed project would not result in a direct increase in population or employment or new housing.

5.2.2 Indirect Growth-Inducement Potential

To determine indirect growth inducement potential, the proposed project was reviewed to ascertain whether it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. Therefore, to assess whether the proposed project would induce growth indirectly, it must be determined whether the project frees up (i.e., increases the amount of) potable water that would be available for urban development, thus removing an obstacle for growth. To make this determination, this section studies the current and projected water demand in the individual Member Agency service areas, planned use of recycled water as a supply source to meet increasing water demands, and the role of the proposed project. In addition, projected growth and potential development that is planned under the local general plans are presented, as relevant.

5.3 Water Supply and Recycled Water Use

Table 5-1 presents a summary of projected urban water demands for 2030 within the NBRWP service areas, which include the urban areas of Novato, the City of Sonoma, and the Milliken-Sarco-Tulucay (MST) Area of Napa County. This information has been compiled from the water demand projections included in the Sonoma County Water Agency (SCWA) *Water Project EIR* (SCWA, 2008) and the *2050 Napa Valley Water Resources Study* (City of Napa 2007), and presents projected water demands, water supply, conservation, and recycled water levels that have been included in regional water supply planning. The total projected urban water use within the NBWRP Service Areas is estimated to be 23,099 AFY by 2030. Implementation of Phase 1 of the NBWRP would provide approximately 2,100 AFY of urban irrigation demand offset.

Table 5-2 provides a summary of agricultural demands broken down by use type for Marin, Sonoma, and Napa Counties. This information was compiled as part of the Phase 3 Engineering and Economic/Financial Analysis Report, and is calculated based on land use patterns and crop water needs. The California Department of Water Resources (DWR) provided land use data for Marin County; Napa SD and DWR provided land use data for Napa County; and SCWA provided land use data for Sonoma County. Land use maps indicate that agricultural and urban landscaping acreage within the NBWRP Service Areas totals about 40,500 acres. Out of this acreage, less than one percent is non-irrigated farmland (idle and dry farming lands).

TABLE 5-1
RELATIONSHIP OF NBWRP PHASE 1 TO LONG-TERM URBAN WATER DEMANDS AND SUPPLY BY NBWRA SERVICE AREA

						NBWRP Phase 1			Population		
	2030 Urban Demand[1]	Conservation[1]	Recycled Water[1]	Local[1]	Projected Supply	Urban	Agriculture	Total	2005	2030	Source
North Marin Water District	15,992[1]	1,518	674	800	13,000[1]	542	0	542	58,816	68,669	Marin Countywide General Plan
LGVSD[2]						204	0	204	n/a	n/a	
Subtotal NMWD Service Area	15,992	1,518	674	800	13,000[1]	744	0	744	58,816	68,669	Marin Countywide General Plan
Valley of the Moon	4,322[1]	504	5	83	3,730[1]	n/a	n/a	n/a	22,665	25,466	Sonoma County General Plan
City of Sonoma	3,397[1]	326	50	21	3,000[1]				10,733	12,984	City of Sonoma
Subtotal Sonoma Valley Service Area	7,719	830	55	104	6,730	874			33,398	38,450	
Napa MST Area	4,155[3]	N/A	420[3]	N/A	4,155	1,368	771	2,137	4,800	5,242	2050 Napa Valley Report
Total	**23,544**	**1,844**	**1,144**	**821**	**20,155**	**2,112**	**1,645**	**3,757**	**97,014**	**112,361**	
Urban vs. Agricultural (%)						**56%**	**44%**	**100%**			

N/A – Not Available
n/a – Not applicable. Under Phase 1 LGVSD supplies would be served in the NMWD service area; therefore, water supply and population information for the NMWD service area account for this water supply offset.

1 SCWA, 2008.
2 LGVSD would supply recycled water to NMWD service area under Phase 1 Therefore, water demands are included in totals for NMWD.
3 City of Napa, 2005. 2050 Napa Valley Resources Study. All 2030 year estimates based on mid-point of 2020 and 2050 projections provided by WYA Report.
4 Brown and Caldwell, 2007.

SOURCE: SCWA, 2008

TABLE 5-2
ESTIMATED IRRIGATION WATER DEMANDS BY USE TYPE VERSUS RECYCLED WATER PROVIDED

Estimated Irrigated Acreage and Water Use in the NBWRP				Recycled Water Provided by NBWRP			
Land Use Type	**Water Use Rate (AF/acre)**	**Acres**	**Total Maximum Water Use (AFY)**	**Phase 1 (AFY)**	**Alternative 1: Basic System (AFY)**	**Alternative 2: Partially Connected System (AFY)**	**Alternative 3: Fully Connected System (AFY)**
Urban Landscaping							
Marin County[1]	2.234	1,335	2,982	744	744	1479	1479
Napa County	2.801	644	1,804	1,364	1,364	1,978	1,978
Sonoma County	3.25	333	1,083	0	435	542	668
Total		*2,312*	*5,868*	*2,110*	*2,545*	*4,201*	*4,127*
Dairy & Pasture							
Marin County	2.502	0	0	0	0	554	647
Napa County		37	92	0	339	339	339
Sonoma County		4,721	11,811	0	249	342	249
Total		*4,757*	*11,903*	*249*	*588*	*1,235*	*1,235*
Orchard							
Marin County	2.971	0	0	0	0	0	0
Napa County		30	90	0	0	10	10
Sonoma County		0	0	0	0	0	0
Total		*30*	*90*	*0*	*0*	*10*	*10*
Irrigated Farm							
Marin County	1.339	0	0	0	0	69	94
Napa County		0	0	0	0	0	0
Sonoma County		2,924	3,915	8	16	41	280
Total		*2,924*	*3,915*	*8*	*16*	*110*	*374*
Vineyard							
Marin County	N/A	0	0	0	0	0	0
Napa County	0.25	10,289	2,572	771	1,487	2,093	2,093
Sonoma County	0.5	20,156	10,078	779	2,020	3,802	4,922
Total		*30,445*	*12,650*	1,550	3,507	5,895	7,015
Totals		**40,469**	**34,428**	*3,468*	*6,440*	*11,051*	*12,561*

N/A = Not applicable

[1] The Petaluma and MMWD service areas are included in this water use estimate.

SOURCE: CDM, 2008

Table 5-2 identifies the type of use category, the number of acres of that use category within the NBWRP service areas, broken down by Marin, Napa, and Sonoma Counties. Additionally, the amount of recycled water that would be available under Phase 1 and each of the Action Alternatives under consideration is provided.

5.3.1 LGVSD Service Area

Water Supply

LGVSD provides wastewater services in San Rafael and areas in the vicinity (within Marin County) that receive water supply from Marin Municipal Water District (MMWD). The sources of water supply for MMWD are the local watershed (surface water) and water from Sonoma County Water Agency (City of San Rafael, 2004). The total current water supply capacity of MMWD is approximately 80,000 acre-feet (AF). Approximately 72 percent of the water used within the MMWD service area is from local reservoirs, 26 percent of the water is from the Russian River in Sonoma County, and 2 percent is from recycled water (City of San Rafael, 2006). **Table 5-3** provides the water supply sources for MMWD.

TABLE 5-3
WATER SUPPLY SOURCES FOR MMWD SERVICE AREA (AFY)

Water Supply Source	2005	2010	2015	2020	2025	2030
Surface water*	20,500	20,500	20,500	20,500	20,500	20,500
Surface water (Imported from SCWA)	8,150	7,590	7,025	5,460	5,900	5,366
Recycled water	650	710	775	840	900	934
Total	**29,300**	**28,800**	**28,300**	**27,800**	**27,300**	**26,800**

* MMWD owns and operates 7 surface water reservoirs; 5 within the Mt. Tamalpais Watershed and 2 within West Marin.

SOURCE: Marin County, 2007b

The potable water available from the MMWD watershed is effectively defined by the capacity of its reservoirs and the operational yield. The watershed is currently managed for an operational early planning phase and cannot be relied upon for additional water supply. The current operational yield of the watershed is approximately 29,000 AFY, causing a current water supply deficit of 1,650 AF. This deficit is projected to increase to 7,900 AFY by 2020 (City of San Rafael, 2004).

MMWD has two contracts for water from the Russian River which could provide water supply of up to 14,300 AFY. However, use of additional Russian River water is limited by pipeline capacity and environmental concerns. To respond to the anticipated supply deficit, MMWD is continuing its efforts to increase water conservation, is exploring additional opportunities to partner on water recycling with LGVSD (City of San Rafael, 2006).

General Plan Policies

MMWD has implemented a recycled water program with LGVSD for water use for irrigation and toilet flushing (City of San Rafael, 2004). Usage of potable and recycled water within the MMWD service area in 2001 and 2002 totaled 31,338 AF.

One of the Marin County General Plan (2007a) policies calls for offsetting new water demand. The policy states that in water districts that provide insufficient water to serve new construction or uses requiring an additional water meter or increased water supply as determined by the district or Marin County, the County shall require new construction or uses to offset demand so that there is no net increase in demand. The County lists use of reclaimed water as one of the measures that would be required to achieve no net increase in demand in addition to water catchments and reuse on site and retrofits of existing uses in the district to offset increased demand. These measures shall be achieved in partnership with the applicable water district and shall serve as evidence that an adequate, long-term, and sustainable water supply is available to serve the project (Marin County, 2007a).

LGVSD is participating in a regional NBWRA recycled water effort to take advantage of the potentially positive aspects related to utilizing reclaimed water in place of potable water to insure rate payers have a more sustainable water source. The LGVSD Strategic Plan lists the proposed project that LGVSD would participate in and receive federal and state funding that will expand the LGVSD's recycled water effort (LGVSD, 2008).

Recycled Water Use Under NBWRP

Partnering of LGVSD with other agencies under NBWRP would provide an opportunity for LGVSD to access federal funding for local recycled water use. As **Table 5-4** below indicates, implementation of Phase 1 would provide 202 AFY of recycled water supply to the Hamilton Field Area, in partnership with NMWD. This would provide offset of potable supplies currently provided by NMWD for landscape irrigation.

TABLE 5-4
RECYCLED WATER USE UNDER THE PROPOSED PROJECT FOR LGVSD SERVICE AREA

Project	No Project Alternative	No Action Alternative	Phase 1	Alternative 1: Basic System	Alternative 2: Partially Connected System	Alternative 3: Fully Connected System
New recycled water use (AFY)	0	0	202	202	409	409
Areas of recycled water use	--	--	Hamilton Field	Hamilton Field	Peacock Gap Golf Course	Peacock Gap Golf Course

SOURCE: CDM, 2009

Full build out of Alternative 1 would not increase recycled water use from LGVSD. Alternative 2 would include construction of facilities to serve Peacock Gap Golf course, with the MMWD service area. This project would be implemented in partnership with MMWD, and would provide an estimated potable supply offset of 202 AFY. No additional facilities would be constructed under Alternative 3.

The provision of recycled water at these levels is consistent with the levels of recycled water use identified in the Marin County General Plan (Table 5-3).

5.3.2 Novato SD Service Area

Water Supply

Novato SD provides wastewater services in Novato and areas in the vicinity (within Marin County) that receives water supply from NMWD. The sources of water supply for NMWD are the Stafford Lake[1] and imported water from SCWA. Recycled water is expected to become available as a third source of water in 2007 (Marin County, 2007b). **Table 5-5** shows the water supply sources for NMWD that serves the Novato SD service area.

TABLE 5-5
WATER SUPPLY SOURCES FOR NMWD (AFY)

Water Supply Source	2005	2010	2015	2020	2025	2030
Surface water (Stafford Lake)	0	1,700	1,700	1,700	1,700	1,700
Surface water (Imported from SCWA)	10,060	10,954	11,785	12,297	12,566	12,724
Recycled water (Tertiary treated)	0	430	69	800	910	1,020
Other (Raw water for irrigation)[1]	250	250	250	250	250	250
Total	**10,310**	**13,334**	**14,425**	**15,047**	**15,426**	**15,694**

[1] Untreated water pumped from Stafford Lake used for irrigation of Stafford Lake Park and Indian Valley Golf Course, value not included in 1,700 acre-feet safe yield. The table does not include the secondary-treated wastewater use for NMWD pastureland irrigation

SOURCE: Marin County, 2007b

Stafford Lake's historical annual yield is 2,000 acre-feet (AF) and the safe long-term annual yield has been determined to be 1,700 AF. As indicated in Table 5-5, the current and projected Stafford Lake water supply has been estimated at its safe long-term yield of 1,700 AFY. Most of NMWD's water supply (about 80 percent) is obtained through an agreement with SCWA that provides water principally from the Russian River.

[1] Stafford Lake, a reservoir on Novato Creek west of Novato.

General Plan Policies

As noted in the Marin County General Plan, the main constraints and limitations to the water supply in the NMWD service area include (Marin County, 2007b):

- Physical capacity of SCWA's transmission system;
- Water rights limitations of Novato Creek / Stafford Lake;
- Groundwater quality and quantity limitations;
- Drought impacts to SCWA supplies. An extended drought could result in a supply reduction of 30 percent or more; and
- Legal and environmental impacts to SCWA supplies. Anticipated future supply increases may be delayed due to approval of additional water rights and challenges to environmental documentation.

The water supply is adequate to meet the demand under Novato General Plan buildout. Water distribution facilities are developed on a site-by-site basis, financed by the developer through agreements with the water agency (City of Novato, 2003). As part of the Public Facilities policy of water conservation, Novato General Plan (2003) states two programs for the City: Use of treated wastewater for irrigation of City facilities and encourage wastewater irrigation at other public and private facilities, where practicable, and support and encourage reclamation of wastewater for reuse wherever possible in accordance with the regulations and ordinances of the NMWD and MMWD. A third program states considering developing a plan in conjunction with the Novato SD and water districts to promote and maximize to the extent feasible the reuse of treated wastewater and consider enacting an ordinance to have developments provide wastewater distribution facilities in conformance with the General Plan.

Novato SD is actively planning upgrades to water recycling facilities and expansion of recycled water use (Marin County, 2007b). Currently, the treated wastewater from the Novato SD WWTPs is used to irrigate 1,000 acres of district-owned or leased pasturelands during dry weather. The irrigation program, which has been operating since 1986, reclaims an average of over 40 percent of the average annual dry-weather flow and has proven to be a financial success for Novato SD. Novato SD is the largest recycled water producer in the MMWD service area. Recycled water use occurs mainly in central Marin County within NMWD's and MMWD's service areas. Secondary-treated water is used for pasture irrigation on NMWD's land and tertiary treated water is used for irrigation, toilet flushing, car washes, cooling towers, and laundries (Marin County, 2007b).

Recycled Water Use Under NBWRP

As shown in Table 5-5 above, the Marin County General Plan anticipates recycled water use to increase gradually over time. It is projected that by 2030 approximately 1,020 AF of tertiary treated effluent would be used for urban landscape irrigation (Marin County, 2007b). The SCWA Water Project EIR identifies 674 AFY of recycled water use in the NMWD service area.

Table 5-6 below summarizes the amount of recycled water and the service areas identified under each of the NBWRP Alternatives. Under Phase 1, approximately 542 AFY would be provided within the Novato SD/NMWD service area. Additionally, 202 AFY would be provided by LVGSD to the NMWD service area, resulting in a total recycled water supply of 744 AFY under Phase 1 for Marin County. This is consistent with recycled water and water supply planning within the region, although it is slightly higher than the amount of potable offset included in the SCWA Water Project EIR.

TABLE 5-6
RECYCLED WATER USE UNDER THE PROPOSED PROJECT FOR NOVATO SD SERVICE AREA

Project	No Action Alternative	No Action Alternative	Phase 1	Alternative 1: Basic System	Alternative 2: Partially Connected System	Alternative 3: Fully Connected System
New recycled water use (AFY)	0	193	542	542	2,038	3,971
Areas of recycled water use	--	North Novato UWMP Area	North and central Novato UWMP Area	North and central Novato UWMP Area	Full Novato UWMP and Sears Point	Sears Point, Southern Sonoma Valley area

SOURCE: CDM, 2008

Full buildout of Alternative 1 would be equivalent to Phase 1, as no additional supplies would be provided within the Novato SD/NMWD service areas. Alternative 2 would provide for increased urban uses within the City of Novato and provision of agricultural irrigation supplies to the Sears Point area. Under Alternative 3, supplies would also be provided to the Southern Sonoma Valley from Novato SD.

5.3.3 SVCSD Service Area

Water Supply

SVCSD provides wastewater services in the area (i.e., portions of city of Sonoma and unincorporated Sonoma County) that receives water supply from Sonoma County Water Agency (SCWA). Most water in the city is purchased from SCWA, with City wells augmenting that supply during periods of peak use. Even if residential construction continues to be limited by the Growth Management Ordinance, water supply and delivery capacity in Sonoma likely will need to be expanded by 2010 through activation of one of the dormant City wells, and again by 2015 through the planned construction of additional pipe by SCWA (City of Sonoma, 2006a).
Policy 1.6 of the Sonoma General Plan (2006) limits growth in Sonoma to a rate that is based on the cost-effective provision of services within the sphere of influence. SVCSD upgraded the wastewater treatment plant to provide tertiary treatment and increase the amount of reclaimed wastewater use by pursuing additional reclaimed water user contracts to address potential impacts

resulting from projected growth within the city of Sonoma and the SVCSD as a whole (City of Sonoma, 2006b).

The Russian River and groundwater are the primary water supply sources for SCWA. In recent years, both water conservation and re-use programs have expanded considerably. As advanced treatment has become an increasingly standard practice, water reuse programs are becoming even more viable (Sonoma County, 2008). **Table 5-7** provides the water supply sources for SCWA and the projected demand under the 2005 Urban Water Management Plan (SCWA, 2006).

TABLE 5-7
WATER SUPPLY SOURCES FOR SCWA (AFY)

Water Supply Source	2010	2015	2020	2025	2030
Groundwater	3,870	3,870	3,870	3,870	3,870
Surface Water	75,000	75,000	101,000	101,000	101,000
Total Water Supplies	78,870	78,870	104,870	104,870	104,870
Projected Demand (2005)	73,642	74,983	85,717	96,574	101,000
Difference (Supplies - Demand)	*5,228*	*3,887*	*19,153*	*8,296*	*3,870*

SOURCE: Sonoma County, 2006 (uses 2000 Urban Water Management Plan)

General Plan Policies

The Sonoma County General Plan lists the following goals and policies that support recycled water use:

- *GOAL WR-4*: Increase the role of conservation and safe, beneficial reuse in meeting water supply needs of both urban and rural users.
- *Objective WR-4.1*: Increase the use of recycled water where it meets all applicable regulatory standards and is the appropriate quality and quantity for the intended use.
- *Policy WR-4j*: Ensure that public wastewater disposal systems are designed to reclaim and reuse recycled water for agriculture, geothermal facilities, landscaping, parks, public facilities, wildlife enhancement and other uses to the extent practicable, provided that the water meets the applicable water quality standards and is supplied in appropriate quantities for the intended uses.
- *Policy WR-4k*: Where consistent with water quality regulations, encourage graywater systems, roof catchment of rainwater and other methods of re-using water and minimizing the need to use potable surface water or groundwater.

SCWA is involved with coordinating several types of recycled water programs. SCWA works with a number of local authorities responsible for water supply and wastewater collection and distribution. SCWA and its contractors encourage recycled water use by collecting, as part of the water rates, funds to be held in special reserve for recycled water projects carried out by its water

contractors and other customers. Current and future recycled water projects have been developed within SCWA's service area to accommodate for additional flow from projected growth as indicated in the adopted general plans and stringent wastewater discharge regulations. SCWA also enters into recycled water use agreements with private individual water users near recycling facilities that it operates (SCWA, 2008).

Recycled Water Use Under NBWRP

As previously shown in Table 5-2 and Table 5-3, regional water supply planning anticipates recycled water use to increase gradually over time, and provision of recycled water has been included in long-term planning. The SCWA Water Project EIR (2008) identifies 50 AFY of recycled water use within the City of Sonoma, and 5 AFY within the Valley of the Moon service area. **Table 5-8** below shows the recycled water use under the NBWRP for SVCSD service area. The recycled water produced under the proposed project would offset equivalent amount of potable water use for both urban uses (111 AFY) served by SCWA via the Sonoma Aqueduct, and groundwater and surface water supplies used by agricultural irrigators (1,862 AFY). Provision of recycled water within Sonoma Valley would reduce peak demands on potable water supplies within urban areas, reduce groundwater pumpage, and reduce surface water diversions for irrigation.

TABLE 5-8
RECYCLED WATER USE UNDER THE PROPOSED PROJECT FOR SVCSD SERVICE AREA

Project	No Project Alternative	No Action Alternative	Phase 1	Alternative 1: Basic System	Alternative 2: Partially Connected System	Alternative 3: Fully Connected System
New recycled water use (AFY)	0	874	874	2,719	4,381	4,230[1]
Areas of recycled water use	--	Portion of Existing SVCSD Recycled Water Project Area, Napa Salt Ponds.	Existing SVCSD Recycled Water Project Area, Napa Salt Ponds.	Existing SVCSD area (Carneros West), Napa Salt Ponds, additional portions of Sonoma Valley	Additional areas in the SVCSD southern Sonoma Valley	North of Sonoma Valley to Central Sonoma service area

[1] Reuse from SVCSD is reduced by 152 AFY under Alternative 3, as Southern Sonoma Valley is served by supplies from Novato SD, and SVCSD supplies are used to serve the Central Sonoma service area, located further north in the Sonoma Valley.

SOURCE: CDM, 2008b.

Additionally, Phase 1 would include provision of recycled water to the Napa Salt Ponds from the SCVSD, providing environmental enhancement through the dilution of bittern within Pond 7 and 7A. Provision of these supplies for environmental enhancement would not affect growth trends within the Sonoma Valley.

Alternative 1 would include facilities necessary to provide additional supplies for both urban and agricultural irrigation, increases recycled water supplies to 2,719 AFY. Supplies would continue

to be served to the Napa Salt Ponds for enhancement purposes. Alternative 2 would increase recycled water supply to 4,381 AFY by extending facilities to serve irrigators in the Southern Sonoma Valley. Alternative 3 would direct recycled water generated at the SVCSD WWTP to the Central Sonoma Valley, extending recycled water service further north up the Sonoma Valley. Supplies provided would be slightly reduce compared to Alternative 2, as slightly higher demands are present in the Southern Sonoma Valley, which would be served by supplies from Novato SD under Alternative 3.

5.3.4 Napa SD Service Area

Water Supply

Napa SD provides wastewater services to the city of Napa and other areas within Napa County that receive water supply from the Napa Water Division. The sources of Napa's water supply are Milliken Reservoir, Lake Hennessey, and water purchased under contract from the State Water Project. There is a need for additional water supply to accommodate projected growth in the city (City of Napa, 2007). **Table 5-9** provides the available water supplies for Napa for normal, multi-dry, and single-dry years under current, 2020, and 2050 conditions.

TABLE 5-9
WATER SUPPLIES FOR NAPA WATER DIVISION (AFY)

Water Source	Normal Year	Multi-Dry Years	Single-Dry Year	*Water Demands*
				Napa
Current				15,370
Total Local Storage	18,200	11,117	5,400	
Total Depletion of Storage	-	1,333	6,600	
Total SWP Water	10,336	5,440	2,720	
Total Water Supply	28,536	17,890	14,720	
2020				18,798
Total Local Storage	18,200	11,117	5,400	
Total Depletion of Storage	-	1,333	6,600	
Total SWP Water	14,972	7,880	3,940	
Total Water Supply	33,172	20,330	15,940	
2050				21,643
Total Local Storage	18,200	11,117	5,400	
Total Depletion of Storage	-	1,333	6,600	
Total SWP Water	15,048	7,920	3,960	
Total Water Supply	33,248	20,370	15,960	

SWP = State Water Project

SOURCE: West Yost & Associates, 2005

During multi-year droughts, the City's existing water supply is insufficient to meet the needs of the city in the event that there is a cutback in State Water Project allocation. The water deficit would become less problematic in the future because the City's water entitlements from the State Water Project would grow significantly faster than projected growth in water demand in the

City's water service area. Based on the City's current contract, the 1996 entitlement of 6,200 AF would increase to 18,800 AF by the year 2021 (its ultimate SWP entitlement). This will provide a surplus in most years and the ability to absorb large cutbacks in dry years. For the purposes of long range analysis, the *Water System Optimization and Master Plan*[2] assumes a 50 percent reduction in SWP deliveries and a reduction in water demand of 20 percent during dry years to reflect the City's drought demand management measures. At the current entitlement schedule, there will remain a remote possibility that a cutback in State Water Project allocations could result in a water deficit up until the year 2012. Based on past drought experience, the impact of this deficit is public inconvenience and minor loss of irrigated landscape. The City's water distribution system also has insufficient short-term storage capability to address current and projected needs (City of Napa, 2007).

The unincorporated areas of Napa County rely principally on groundwater resources and surface water collection. There are three main groundwater basins in Napa County: North Napa Valley, MST, and Carneros. According to the *2050 Napa Valley Water Resources Study*, during wet years, with ample rainfall, sufficient water supply would be available under current and future conditions, however storage capacity may be inadequate. Projections for dry years, however, show users in both Napa's incorporated and unincorporated areas may not have enough water to meet all their needs through the year 2050. Thus, both municipal water supplies and groundwater supplies may face challenges (County of Napa, 2008). **Table 5-10** provides water supplies and demand for the unincorporated areas (i.e., Main Basin, MST, and Carneros).

TABLE 5-10
WATER SUPPLIES AND DEMANDS IN UNINCORPORATED AREAS IN THE PROJECT AREA (AFY)

Water Sources	Groundwater	Surface Water	Recycled Water	*Total Water Supply*	*Water Demands*
Current					
Main Basin	28,000	7,900	900	36,800	*33,656*
MST	3,054	250	-	3,304	*3,313*
Carneros	1,347 to 1,747	800 to 1,200	-	2,147 to 2,947	*2,547*
Total	32,401 to 32,801	8,950 to 9,350	900	42,251 to 43,051	*39,516*
2020					
Main Basin	28,000	7,900	1,072	36,972	*36,416*
MST	3,040	250	420	3,710	*3,710*
Carneros	744 to 1,172	800 to 1,200	1,495 to 2,110	3,039 to 4,482	*3,467*
Total	31,784 to 32,212	8,950 to 9,350	2,987 to 3,602	43,721 to 45,164	*41,593*
2050					
Main Basin	28,000	7,900	1,500	37,400	*41,148*
MST	3,931	250	420	4,600	*4,601*
Carneros	2,409 to 3,424	800 to 1,200	1,495 to 2,110	4,704 to 6,734	*5,719*
Total	34,340 to 35,355	8,950 to 9,350	3,415 to 4,030	46,700 to 48,735	51,468

SOURCE: West Yost & Associates, 2005

[2] The City's *1996 Water System Optimization and Master Plan* was prepared to address the current and long-term water supply needs of the community. The plan includes goals, policies and implementation measures, along with the environmental analysis, to address the current and long-term water system needs for the city (City of Napa, 2007).

While groundwater use is not a significant source for municipal uses, groundwater typically serves as the main water supply source to meet water demands in the unincorporated areas of the county. The water demand in the Napa River Watershed estimated at approximately 39,500 AFY in 2000 is projected to increase to approximately 51,500 AFY in 2050.[3] The "2050 Study" identifies potential water supply projects that may be pursued to reliably meet existing and future demands. It also cautions municipalities considering groundwater use and urges aggressive pursuit of recycled water as a supply for non-potable (irrigation) water. Napa SD has initiated planning for provision of recycled water to the MST and Carneros areas (County of Napa, 2008), which is part of the proposed project (County of Napa, 2008). Table 5-10 shows water supply and demand in the Main Basin, MST and Carneros areas.

General Plan Policies

Measures explored jointly by the Napa Water Division and Napa SD to address increasing water demands include greater use of recycled water and incentive programs for use of water conservation measures within new developments above and beyond the currently mandated programs (City of Napa, 2007).

The 1998 Napa General Plan lists a policy to evaluate the feasibility of use of reclaimed wastewater in appropriate locations. In order to plan future and adequate water supply capacity and services to Napa, the General Plan calls for the implementation of the *1997 Water System Optimization and Master Plan* (City of Napa, 1998). The 1997 Master Plan identifies use of reclaimed wastewater to offset potable water supplies currently being used to irrigate parks, a golf course, and other landscaped areas in Napa and improvements to water supplies during drought years. The City would enter into an agreement with Napa SD to deliver recycled water to the current City customers. The areas proposed for recycled water use in the General Plan are area south of Imola Avenue, east of Napa River, and west of Highway 221 (including the Napa State Hospital property), the south Napa Market Place, the Stanly Ranch, and the property owned by Napa SD adjacent to Imola Avenue bordering Napa River. The water reuse in the proposed areas would offset potable water use for irrigation of turf at Kennedy Golf Course, Kennedy Park, and Napa Valley College. Recycled water use could offset 400 AF of water currently being used for landscaping irrigation and offset potable water use for landscape irrigation for future development (City of Napa, 1998).

Future growth projected in the Napa Valley is anticipated to exceed current and projected water supply sources under year 2020 and 2050 and would further exacerbate groundwater conditions for MST and Carneros basins. The Napa County General Plan (2008) lists conservation policies that include maintaining and improving slough and tidal mudflats habitat with appropriate measures such as utilizing reclaimed wastewater for salinity control and include promoting development of additional water resources to improve water supply reliability and sustainability in Napa County, including imported water supplies and recycled water projects. The County would promote and support the use of recycled water wherever feasible, including the use of tertiary treated water, to help improve supply reliability and enhance groundwater recharge.

[3] This increase in demand is predominantly a result of existing vineyards ultimately being converted to denser plantings (i.e., increased vine density per unit area).

Recognizing that groundwater best supports agricultural and rural uses, the County discourages urbanization requiring net increases in groundwater use and discourages incorporated jurisdictions from using groundwater except in emergencies or as part of conjunctive-use programs that do not cause or exacerbate conditions of overdraft or otherwise adversely affect the County's groundwater resources (County of Napa, 2008).

As stated in Policy AG/LU-74, the County supports the extension of recycled water use to the Coombsville area to reduce reliance on groundwater in the MST groundwater basin and exploration of other alternatives. Also, the County shall identify and support ways to utilize recycled water for irrigation and non-potable uses to offset dependency on groundwater and surface waters and ensure adequate wastewater treatment capacity through measures such as using wastewater treatment and reuse facilities where feasible to reclaim, reuse, and deliver treated wastewater for irrigation and possible potable use depending on wastewater treatment standards and encouraging the use of non-potable/recycled water wherever recycled water is available and require the use of recycled water for golf courses where feasible (County of Napa, 2008).

Napa SD has an extensive Water Reuse program to promote the use of recycled water in the community. Napa SD has produced nearly 2,149 AFY of Title 22 unrestricted use water. The role of water reuse has been critical in the Napa Valley area, which has limited water supply and which relies on groundwater and imported water for potable water supply. The availability of recycled water has allowed the area to develop recreational facilities including the world famous Chardonnay Golf Course and Vineyards, and Eagle Vines Vineyards and Golf Course (Napa SD, 2008).

The goal of Napa SD is to double the recycled water use to 50% of all wastewater it collects and discharges. This would make approximately 3,500 AFY available for use in and around the city. Napa SD continues to seek users for recycled water (Kennedy Park Golf Course, public agencies and private entities by Imola Avenue, and Stanly Ranch property). Policy CA-10.2 states that the City of Napa shall support continued efforts by the Napa SD to promote the use of recycled water (City of Napa, 2007).

The 2050 Study[4] identifies potential water supply projects that may be pursued to reliably meet existing and future demands. It also cautions municipalities considering groundwater use and urges aggressive pursuit of recycled water as a supply for non-potable (irrigation) water. Napa SD has initiated planning for provision of recycled water to the MST and Carneros areas. The Napa County General Plan contains a number of policies that address water supply, conservation, and reuse. The Plan contains policies supporting the protection of surface and groundwater resources, as well as policies that require the county to monitor groundwater supplies where publicly owned wells exist, and encourage voluntary private monitoring of the county's groundwater resources. The General Plan includes policies that reinforce the development and use of recycled water as a means of meeting future water supply demands (Napa County, 2008a).

[4] The Napa County Flood Control and Water Conservation District recently conducted a study, the "2050 Napa Valley Water Resources Study," comparing available Napa Valley water supplies to existing and future water demands through the year 2050.

Recycled Water Use under NBWRP

Table 5-11 below shows the recycled water use under the NBWRP for Napa SD service area. The recycled water produced under the proposed project would offset equivalent amount of potable water use, which would provide for reliable water supply to meet the projected demands shown in Table 5-10 above.

TABLE 5-11
RECYCLED WATER USE UNDER THE PROPOSED PROJECT FOR NAPA SD SERVICE AREA

Project	No Project Alternative	No Action Alternative	Phase 1	Basic System	Partially Connected System	Fully Connected System
New recycled water use (AFY)	0	0	2,137	3,192	4,421	4,421
Areas of recycled water use	None	None	MST area	MST, East Carneros area	Southeast Napa, expanded Carneros east area	-

SOURCE: CDM, 2008

5.3.5 Summary of the Indirect Growth Inducement Potential

As discussed in **Sections 5.3.1 through 5.3.4**, the Member Agencies would experience water supply deficits in the face of new development in the service areas. Recycled water use under the NBWRP would offset potable water demand and make potable water available for new development. However, as discussed above, the new development is part of the planned growth and development of the individual General Plans. The NBWRP would not induce additional growth beyond that planned for in the LGVSD, Novato SD, SVCSD, Napa SD areas. The level of growth would be consistent with the extent planned and approved by the local General Plans in the area.

The provision of adequate water supply is an essential component for the preservation of agricultural practices within the region. There are local policies that preserve agricultural land uses in the region. The Napa General Plan for example, has policies for agricultural preservation because agricultural and related activities are the primary land uses in Napa County. Napa County's Measure J - the Agricultural Lands Preservation Initiative, was passed in 1990 and is intended to preserve the County's agricultural lands, which have a General Plan land use designation of Agricultural Resource or Agricultural, Watershed and Open Space. Measure J provides that, lands designated as "Agricultural Resource" or "Agriculture, Watershed and Open Space" may not be re-designated to another land use category except by a majority vote of the people; if the land is annexed to a city; or if it is re-designated by the Board of Supervisors pursuant to procedures set forth in the initiative, and only if certain findings can be made. The General Plan at the time of adoption of Measure J, provided for a minimum parcel size of 160 acres for lands designated as Agriculture, Watershed and Open Space; and a minimum parcel size of 40 acres for lands designated as Agricultural Resource.

The recycled water use is a part of the planned water supplies and would not provide new water supplies or remove obstacle to growth beyond that discussed in the General Plan EIRs. Effects resulting from growth anticipated in the individual service areas for the Member Agencies are discussed in **Section 5.4** below.

5.4 Secondary Effects of Growth

Impact 5.1: The NBWRP would provide recycled water for urban, agricultural, and environmental uses, and as such, would contribute to the provision of adequate water supply to support a level of growth that is consistent with the amount planned and approved within the General Plans of Marin, Sonoma and Napa Counties. No appreciable growth in population or employment would occur as a direct result of construction or operation of the proposed facilities. However, development under the General Plans accommodated by the proposed project would result in secondary environmental effects, which include effects that would be significant and unavoidable.

Implementation of the proposed project would allow the Member Agencies to provide the level of treatment, conveyance, storage, and pumping capacity for production and distribution of recycled water. As discussed, the proposed project would not result in a direct increase in population or employment, however the project would offset potable water demand and assist in providing water supply that is planned under the local General Plans as discussed above in **Section 5.3**, and that could provide for new use and development that is projected to occur and is consistent with the local General Plans. Potentially adverse secondary effects could result from development of planned land uses in the project area. Because the proposed project would not induce growth beyond that discussed in the local General Plans and General Plan EIRs, the secondary effects of growth would be consistent with those discussed in the General Plans and General Plan EIRs. Secondary effects of growth identified in the local General Plan EIRs as well as the policies and mitigation measures established to minimize the effects, are summarized in the tables and discussion below for each Member Agency.

Buildout under the General Plan requires several types of infrastructure, including an adequate water supply; the proposed action would contribute to the provision of adequate water supplies, both urban and agricultural, within the service areas of the Member Agencies. The secondary impacts related to buildout under the approved General Plans within the service areas of the NBWRA Member Agencies are disclosed in the General Plan EIRs for Cities of San Rafael, Novato, Sonoma, and Napa, and the Counties of Marin, Sonoma, and Napa. A summary of impacts from the General Plan EIRs and mitigation measures that would reduce the impacts to less-than-significant levels is discussed below.

The NBWRA Member Agencies do not have the authority to control land use and growth within the recycled water service areas identified under the NBWRP, or to mitigate for the secondary effects of those land use decisions. Marin, Sonoma and Napa Counties, and the incorporated cities of San Rafael, Novato, Sonoma and Napa, have primary land use jurisdiction and responsibility to regulate growth through the land use planning and development approval

process. Other agencies, which have decision-making authority to implement mitigation measures related to secondary impacts of growth in the project area are shown in **Table 5-12**.

TABLE 5-12
AGENCIES HAVING PLANNING AND MITIGATION AUTHORITY

Agency	Authority
Marin, Sonoma and Napa County	Responsible for planning, land use, and environmental protection of unincorporated areas. Of particular importance are development of presently undeveloped lands, provision of regional solid waste management facilities, and regional transportation, air quality and flood control improvement programs.
Cities of Novato, Sonoma and Napa	Responsible for adoption of the General Plan and various planning elements and local land use regulations. Adopts and implement local ordinances for control of noise and other environmental concerns. Participates in regional air quality maintenance planning through adoption of local programs to control emissions via transportation improvements. Responsible for enforcing adopted energy efficiency standards in new construction.
Local Agency Formation Commission	Empowered to approve or disapprove all proposals to incorporate cities to form special districts or to annex territories to cities or special districts. Also empowered to guide growth of governmental service responsibilities.
Regional Water Quality Control Board, San Francisco Bay Region	Shares responsibility with State Water Resources Control Board (SWRCB) to coordinate and control water quality. Formulates and adopts water quality control plans. Implements portions of the Clean Water Act when the U.S. EPA and SWRCB delegate authority, as is the case with issuance of National Pollutant Discharge Elimination System (NPDES) permits for waste discharge, reclamation, and storm water drainage.
State Department of Health	Responsible for the purity and potability of domestic water supplies for the state. Assists SWRCB and Regional Water Quality Control Boards (RWQCBs) in setting quality standards.
California Air Resources Board	Responsible for adopting and enforcing standards, rules, and regulations for the control of air pollution from mobile sources throughout the state.
Bay Area Air Quality Management District	Adopts and enforces local regulations governing stationary sources of air pollutants. Issues Authority to Construct Permits and Permits to Operate. Provides compliance inspections of facilities and monitors regional air quality. Developed the Clean Air Plan in compliance with the Clean Air Act.
U.S. Fish and Wildlife Service	Requires consultation under Section 7/10 of the Endangered Species Act for projects which could potentially impact endangered or threatened species. Prepares biological opinions on the status of species in specific areas and potential effects of proposed projects. Approves mitigation measures to reduce impacts and establishes Habitat Conservation Plans (HCPs).
U.S. Army Corps of Engineers	Issues permits to place fill in waterways pursuant to Section 404/408 of the Clean Water Act.
California Department of Fish and Game	Issues Stream Bed Alteration Agreements for projects potentially impacting waterways.

SOURCE: ESA

Local land use plans and specific development plans have been adopted and approved, with the local lead agency adopting a statement of overriding consideration for these significant unavoidable effects. The Proposed Project would not increase the nature, number or severity of significant effects associated with planned development.

5.4.1 No Project Alternative

Under the No Project Alternative, project implementation would not occur. There would be no change from existing conditions. No alteration of the location, rate, or timing of growth within the project area would occur, and no secondary effects related to that growth would occur. For discussion of the No Project Alternative, future conditions, please refer to the No Action Alternative below.

5.4.2 No Action Alternative

Under the No Action Alternative, which includes consideration of future conditions, it is likely that a subset of water recycling projects would be implemented by the Member Agencies on an individual basis, without the benefit of regional coordination or federal funding. These projects would provide an estimated 1,067 AFY of recycled water supply.

Future baseline conditions (2020) would include continued development under the Marin, Sonoma, and Napa General Plans, as well as the General Plans for each of the municipalities served by the Member Agencies. Development of both urban and agricultural uses would continue to place pressure on surface and groundwater resources within the region, particularly during high demand summer months, when the reliability of supplies is reduced. Population within the region is anticipated to increase by approximately 4 percent by 2010 and 2015 and by 2 percent through 2030, as shown in **Table 5-13**. **Tables 5-14** and **5-15** show the total projected water use in the individual service areas and total water use by agency contractors and customers.

TABLE 5-13
CURRENT AND PROJECTED POPULATION IN THE SERVICE AREAS

	2005	2010	2015	2020	2025	2030
NMWD	58,816	60,676	64,072	66,271	67,569	68,669
City of Sonoma	10,733	12,348	12,642	12,740	12,838	12,984
Rural Sonoma Valley	30,100	30,900	30,900	30,900	31,100	31,200
City of Napa*	76,400	79,000	82,000	84,100	85,600	87,300
Total	**176,049**	**182,924**	**189,614**	**194,011**	**197,107**	**200,153**

* - City of Napa includes population for the MST area.

SOURCE: SCWA 2005; ABAG 2005; ABAG, 2007

TABLE 5-14
TOTAL PROJECTED WATER USE IN THE PROJECT AREA (AFY)

	2005	2010	2015	2020	2025	2030
Surface Water Supplies						
North Marin Water District		12,648	13,484	13,930	14,244	14,473
MMWD[1]		6,915	6,790	11,300	12,800	14,300
City of Sonoma		2,783	2,817	2,806	2,813	3,071
Valley of the Moon		3,748	3,751	3,787	3,798	3,817
City of Napa[2]		17,370	18,084	18,798	19,272	19,746
Groundwater Supplies						
Sonoma Valley						
MST Area[2]	3,313		3,710			4,601
Carneros[2]	2,547		3,467			5,719
Total			52,103			65,727

1 Value does not represent total water use, but only that amount supplied by SCWA.
2 West Yost & Associates, 2005.

SOURCE: SCWA, 2005; Napa County, 2008a.

TABLE 5-15
TOTAL WATER USE BY SONOMA COUNTY WATER AGENCY CONTRACTORS AND CUSTOMERS (AFY)

	Volume (AFY)				
	2010	2015	2020	2025	2030
Water Contractors					
City of Cotati	1,323	1,380	1,511	1,552	1,612
North Marin Water District	12,648	13,484	13,930	14,244	14,473
City of Petaluma	12,848	13,803	14,114	14,732	14,660
City of Rohnert Park	7,116	7,380	7,662	7,767	7,831
City of Santa Rosa	27,884	29,456	30,957	32,633	33,820
City of Sonoma	2,783	2,817	2,806	2,813	3,071
Valley of the Moon Water District	3,748	3,751	3,787	3,798	3,817
Town of Windsor	5,075	5,550	6,120	6,354	6,523
Other Customers					
California American Water Company	1,326	1,368	1,409	1,429	1,451
Forestville Water District	552	563	575	588	602
Kenwood	175	181	186	190	193
Lawndale	66	70	74	83	86
Penngrove	400	457	532	569	604
Marin Municipal Water District	6,915	6,790	11,300	12,800	14,300
Direct Diverters	0	0	2,448	3,671	4,895
Total	82,859	87,050	97,411	103,223	107,939

SOURCE: SCWA, 2005

5.4.3 Phase 1 (Project level)

Compared to the CEQA Baseline, Phase 1 projects would provide 46 miles of new pipeline, 1,655 horsepower (HP) of pumping capacity, treatment facilities providing 6.4 mgd of tertiary capacity, and 65 AF of storage. Compared to the No Action Alternative (NEPA Baseline), Phase 1 projects would provide 28 miles of new pipeline, 743 HP of pumping capacity, treatment facilities providing 5.9 mgd of tertiary capacity. There would be no additional storage required.

The secondary effects of growth associated with the proposed facilities under Phase 1 would be similar to the impacts discussed for the No Action Alternative, in proportion to the facilities constructed under this alternative.

LGVSD

Under Phase 1, LGVSD would provide 202 AFY of recycled water to Hamilton Field, located within unincorporated Marin County. This area is served by NMWD, and provision of recycled water would be implemented in partnership with that agency. Between 2005 and 2030, water supplies for NMWD are anticipated to increase from 10,310 AFY to 15,694 AFY, or approximately 5,384 AFY. This includes development of approximately 1,020 AFY of recycled water.

Phase 1 would provide 202 AFY of recycled water from LGVSD within the NMWD service area. This represents approximately 3 percent of the projected 5,384 AFY of additional water supply projected by NMWD as necessary to meet demands associated with buildout under the approved General Plans within its service area. Phase 1 would provide approximately 20 percent of the 1,020 AFY of recycled water identified as part of this identified water supply. Because recycled water is included within the water supply planning of NMWD and SCWA, and Phase 1 is consistent with the amount of recycled water identified, provision of recycled water is not anticipated to affect the rate, timing, or distribution of urban growth within Marin County.

While project implementation would not induce or alter growth trends in Marin County, it would, as part of the overall water supply conditions, enable secondary effects associated with development under the approved General Plans to occur. **Table 5-16** summarizes the secondary effects of growth identified under the Marin County General Plan. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided.

Mitigation Measures (Marin County)

Mitigation measures proposed in the Marin County General Plan EIR (2007b) include the following measures:

- *Traffic*: Include new establishing policies that would require new transit nodes near new residential areas to reduce vehicle miles traveled, improved operational conditions at specific intersections, and road improvements or additions including reconfiguring or widening some roadways to accommodate more lanes.

TABLE 5-16
IMPACTS ASSOCIATED WITH MARIN COUNTY GENERAL PLAN IMPLEMENTATION

Marin County
Significant and Mitigable Impacts
• Addition of new/ expanded agricultural processing, retail sales, and visitor-serving uses on agricultural land, which conflicts with agricultural land use.
• Development of residential land uses is incompatible with established land use.
• Conversion of undeveloped, agricultural or open space lands to urban uses.
• Compatibility of land uses with existing adjacent communities.
• Increased pollutants and sedimentation reduction in water quality.
• Reduction in groundwater recharge.
• Alteration of drainage patterns.
• Increased exposure of structures to subsidence and settlement.
• Structural damage from soil properties.
• Impacts to water supply from septic systems.
• Permanent direct habitat loss and accompanying reduction or elimination of dependent wildlife, including some special status species.
• Permanent loss of sensitive natural communities (creeks, vernal pools, swales, riparian habitat, freshwater marshes, native grasslands, significant trees, etc).
Significant and Unavoidable Impacts
• Growth within unincorporated areas.
• Convert farmland/prime agricultural soils to urban uses.
• Increase in vehicle miles traveled.
• Impacts to local roadways and intersections which would result in unacceptable LOS.
• Increased volumes on local roadways.
• Inconsistent with Clean Air Plan Transportation Control.
• Buffer zones for potential source of odor/toxics.
• Increase in greenhouse gas emissions
• Temporary significant increase in noise from construction activities.
• Potential for structural damage and injury or loss of life due to impacts from strong groundshaking, including liquefaction.
• Increased risk from seismic related ground failure.
• Increased exposure of people and structures to landsliding.
• Cumulative direct and permanent loss, fragmentation of existing wildlife habitat, and obstruction of movement between habitats.

SOURCE: Marin County, 2007b

- *Air Quality*: Revise General Plan policies to consider odors and toxic air contaminants during siting of facilities; Bay Area Air Quality Management District standards; and a Climate Change Planning Process to implement the Greenhouse Gas Reduction Plan.

- *Noise*: Requiring noise studies prior to approval of any discretionary project involving a potentially significant new noise source or a noise sensitive land use in a noise-impacted area, and providing setbacks, sound attenuation barriers and appropriate building designs.

- *Groundwater*: Implement ordinances that maintain groundwater recharge and surface water runoff management, establishing a Septic Inspection, Monitoring, and Maintenance District, and implementing ordinances that address non-point source pollution, erosion, sediment control, floodplain development, and groundwater supplies.

- *Biological Resources*: Require new development to compensate for the loss of habitat through offsite mitigation and extension of wildlife corridors and actively restore aquatic habitats for listed anadromous fish. The County would also develop Habitat Monitoring Programs and ensure that future development applicants consider overall habitat values.

- *Geology*: Prepare a geotechnical report, incorporate engineering specifications to address susceptibility of a project site to liquefaction, compliance with the Alquist-Priolo Earthquake Fault Zoning Act, enforce state seismic safety standards and a limitation on the location and intensity of development in areas with significant geologic hazards, and revise policies related to seismic safety, retrofit, and location of emergency services to ensure seismic safety of new structures. This would also require the necessary retrofit of critical facilities and proper location of new emergency facilities. The County would continue to implement ordinances to ensure that new construction utilizes seismic safety design requirements, seismic shut off devices, etc.

Novato SD

Under Phase 1, Novato SD would provide 542 AFY of recycled water to the north/central NMWD service area, in partnership with NMWD. Between 2005 and 2030, water supplies for NMWD are anticipated to increase from 10,310 AFY to 15,694 AFY, or approximately 5,384 AFY. This includes development of approximately 1,020 AFY of recycled water.

Phase 1 would provide 542 AFY of recycled water from Novato SD within the NMWD service area. This represents approximately 10 percent of the projected 5,384 AFY of additional water supply projected by NMWD as necessary to meet demands associated with buildout under the approved General Plans within its service area. Phase 1 would provide approximately 57 percent of the 1,020 AFY of recycled water identified as part of this identified water supply. Taking the recycled water provided by LGVSD under Phase 1 into consideration (202 AFY), Phase 1 would provide approximately 72 percent of the 1,020 AFY of recycled water identified by NMWD. Because recycled water is included within the water supply planning of NMWD and SCWA, and Phase 1 would be consistent with the amount of recycled water identified, provision of recycled water is not anticipated to affect the rate, timing, or distribution of urban growth within Marin County.

While project implementation would not induce or alter growth trends in Marin County, it would, as part of the overall water supply picture, enable secondary effects associated with development under the approved General Plans to occur. **Table 5-17** summarizes the secondary effects of

TABLE 5-17
IMPACTS ASSOCIATED WITH CITY OF NOVATO GENERAL PLAN IMPLEMENTATION

City of Novato

Significant But Mitigable Impacts

- Increased risk to people and structures during seismic events.
- Increased risk to new development from tsunamis.
- Increased risk of Stafford Dam failure.
- Exposure to slope failure hazard.
- Construction impacts to streams from erosion and sedimentation.
- Impacts to mineral resources.
- Permanent changes in topography from earthmoving and grading activities.
- Increased exposure of people and structures to flood hazards.
- Impacts to drainage and increased flooding due to impervious surface cover.
- Impacts to streams and stream habitat from runoff and creek bank slumping
- Impacts from runoff could increase the transport of oils, greases and other residues to receiving waterways.
- Potential risk of flood from predicted sea level rise.
- Reduction of the number of trees in the City (especially Oak).
- Loss of wildlife movement or migratory corridors, and plant dispersal opportunities.
- Introduction of invasive or exotic species.
- Displacement of populations of plants and wildlife
- Adverse effects on areas of archaeological and historic importance.
- Impacts to traffic safety and residential neighborhoods from increased volumes of traffic.
- Reduced bicycle and pedestrian safety on roads, and increased demand for bikeways and pedestrian paths.
- Increased traffic congestion on City streets.
- Traffic compliance with the Congestion Management Plan.
- Substantial increase in noise levels along certain roadways.
- Compatibility of new development and surrounding noise environment.
- Consistency of new development with scale, style, and character of existing development.
- Alteration of views along designated corridors and entry points to the city.
- Increase in daytime glare and nighttime lighting.
- Construction of future sound walls will alter existing views.
- Increased amount of wastewater to be treated at existing treatment facilities.
- Inability of existing sewer collectors to collect wastewater.
- Increased demand for public water.
- Need to construct or replace water mains, storage facilities, treatment facilities, and pump stations.
- Increased demand for fire protection services.
- Need for new water mains to ensure adequate fireflows.
- Expanded use, storage, and transport of hazardous materials.
- Increased demand for recreational facilities.
- Additional amounts of solid waste.
- Exposure to electromagnetic fields.
- Conversion of agricultural land to non-agricultural uses.
- Conversion of potential open space to developed land.
- Risk to people and structures at Gnoss Field airport from surrounding development.
- Conflict between land use designation under the Sphere of Influence and land use designations under the Marin Countywide Plan
- Compatibility of residential development n areas currently used for commercial uses.
- Conversion of vacant land to housing and commercial development.

TABLE 5-17 (Continued)
IMPACTS ASSOCIATED WITH CITY OF NOVATO GENERAL PLAN IMPLEMENTATION

City of Novato
Significant and Unavoidable Impacts
• Displacement of wetlands.*
• Buildout traffic will cause portions of Highway 101 and Highway 37 to operate at unacceptable levels of service.**
• Increased number of calls for emergency medical response.
• Increased need for police protection.
Less Than Significant Impacts
• Altered traffic volumes could cause concentrations of localized air pollutants such as carbon monoxide near streets and intersections.
• Increased wastewater could exceed capacity of Novato SD facilities.
• Increased demand for fuel and energy.
• Alteration of the character of the area by implementation of the Downtown Specific Plan.
• Expansion of the City's Sphere of Influence.
• Increase in project-generated noise sources
• Increase in project-generated construction noise
• Carbon monoxide concentration along roadways.
• Impacts from transport of hazardous materials

* Mitigation measures have been established to protect wetlands, but the EIR identifies the loss of some wetlands as significant and unavoidable.
** The traffic on the highways that cause an unacceptable level of service originates from outside of Novato. Even if the City were to limit growth within its jurisdiction, the level of service along these highways would still deteriorate.

SOURCE: Leonard Charles and Associates, 1995.

growth identified under the City of Novato General Plan. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided.

Mitigation Measures (Novato)

Mitigation measures proposed in the Novato General Plan EIR (1995) are described below:

- *Geology*: Include policies that require geotechnical and engineering reports, professional inspection of foundation, monitor existing high priority buildings to ensure structural compliance with seismic safety standards, and provide public information on building safety. To protect new development, require proper siting of projects, setbacks from active faults, restricted development in low lying areas by the Bay, and setbacks from the Stafford Dam.

- *Cultural Resources*: Implement archaeological resources protection through a program that requires that all major development applications be reviewed for potential archaeological resources and that protection measures would be determined by a professional archaeologist.

- *Traffic*: Evaluate level of service on streets, reduce through-traffic on residential streets, and adopt and enforce a truck route to limit truck presence on residential streets. Investigate mitigation measures for projects that would cause a substantial increase in traffic noise to adjacent residential areas.

- *Aesthetics:* Prohibit development within 100 vertical feet of a designated ridgeline within a scenic area, and require development to be clustered below the ridge in areas of open or grassy hillsides. All development along the west side of the freeway from the northern edge of Novato to Atherton Avenue and from the southern edge of Novato to Ignacio Boulevard would be subject to prepare a Constraints Analysis. Implement Lighting Design Guidelines, which incorporate design guidelines for exterior lighting and recommend types of lights and lighting that address security, appearance, and intensity while protecting City views. Caltrans will perform a visual analysis for all new sound walls to show the existing and future views at critical points in order to make a determination. Adopt the Scenic Resources Overlay Zone which establishes criteria to protect ridgelines, hillsides, and other scenic resources and review development proposals on an individual basis to determine the scenic value of visual resources specific to the site. Other measures include landscaping, discouraging repetition and using traditional site design, and evaluating the compatibility with surrounding development.

- *Fire Hazards*: Continue to require all new development to meet adopted fire safety regulations (Fire Code appendix), require all development that includes private access roads to provide access to the Novato Fire Protection District, and implement the Fire Hazard on Public Lands Policy to manage public lands to minimize chances of wildfire.

- *Biological Resources*: To mitigate the impact from introduced exotic or invasive species, one measure includes implementing constraints via the Land Use Chapter Constraints Analysis to ensure pampas grass, acacia, and broom will not be planted as part of new development projects. A new policy will protect ridgelines as critical wildlife corridors to enhance biological resources. Implement Bayfront Overlay Zone in addition to a 100-foot buffer between wetlands and new development to mitigate impacts to habitat, a U.S. Army Corps of Engineers Determination of Wetlands Statement, and new programs for determining, regulating, and permitting wetlands.

- *Air Quality*: Enforce U.S. Environmental Protection Agency standards for particulate emissions when wood-burning fireplaces or stoves are installed, review all industrial development for potential impact to sensitive receptors, and require buffer zones between industrial development and sensitive receptor.

SVCSD

Under Phase 1, SVCSD would provide 874 AFY of recycled water to the city of Sonoma and surrounding areas for urban and agricultural use. Between 2010 and 2030, surface water supplies to the city of Sonoma are anticipated to increase from 2,783 AFY to 3,071 AFY, or approximately 288 AFY. Supplies to the Valley of the Moon Water District are anticipated to increase by 69 AFY from 3,748 AFY to 3,817 AFY. Under Phase 1, recycled water would be available to offset 111 AFY of urban demands in the city of Sonoma, or approximately 31% of this projected potable demand increase within the Sonoma Valley. As previously noted in Table 5-1, Sonoma County Water Agency has included provision of recycled water to the Sonoma Valley within its regional water supply projections.

Additionally, recycled water would be available to offset 1,862 AFY of agricultural groundwater pumpage. As noted in **Section 3.2, Groundwater Resources**, service to these existing agricultural users would be anticipated to offset current groundwater pumping, with some offset of local surface water diversions were present.

Because the provision of recycled water has been included within the water supply planning of SCWA for urban uses, and Phase 1 is consistent with the amount of recycled water identified, provision of recycled water is not anticipated to affect the rate, timing, or distribution of urban or agricultural growth within the City of Sonoma or Sonoma Valley.

While project implementation would not induce or alter growth trends in the Sonoma Valley, it would, as part of the overall water supply picture, enable secondary effects associated with development under the approved General Plans to occur. **Table 5-18** summarizes the secondary effects of growth identified under the City of Sonoma General Plan. **Table 5-19** summarizes the secondary effects of growth identified under the Sonoma County General Plan. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided.

Mitigation Measures (City of Sonoma)

Mitigation measures identified in the EIR to minimize or reduce the impacts caused by implementation of the City of Sonoma General Plan are described below:

- *Visual Resources*: Utilize high quality architectural designs in new development, preserving scenic vistas and corridors, retaining prominent natural features on project sites, and encouraging architectural designs that are consistent with the historic character of the community.

- *Land Use*: Maintain an Urban Growth Boundary to limit urban expansion, develop new General Plan policies and Specific Plan features, and contract the city's Sphere of influence.

- *Traffic*: Install road improvements along certain roads and specific intersections.

- *Noise*: Implement setbacks, sound barriers, and noise-reducing construction practices.

- *Public Services and Utilities*: Evaluate and adjust allocation to police and fire protection, and emergency medical services. Contract negotiations with SCWA to increase the City's entitlement, promotion of water conservation and recycling, and provision of maintenance and upgrading of the municipal water system to mitigate water supply demands. Increase in conservation, reclaimed water use, additional treatment facilities, and compliance with upgraded NPDES permits to mitigate wastewater service impacts.

- *Cultural Resources*: Conduct archaeological field surveys and evaluate sites containing historic structures.

- *Geology/ Hydrology*: Prepare a grading and design plan that includes erosion control and rehabilitation phases. Incorporate specific design criteria to correct for soil properties like shrink-swell to mitigate structural damage from soil properties. Implement SCWA Flood Control Design Criteria, best management practices, and provisions for permanent surface maintenance for all new development.

- *Biological Resources*: Implement offsite mitigation to compensate losses, riparian habitat restoration activities, proper siting and placement of projects and bikeways, and City cooperation with local farmers to increase habitat protection.

TABLE 5-18
SIGNIFICANT IMPACTS OF GENERAL PLAN DEVELOPMENT ASSOCIATED WITH THE CITY OF SONOMA

City of Sonoma
Significant But Mitigable Impacts
• Increased short-term and long-term erosion potential.
Significant and Unavoidable Impacts
• Conversion of undeveloped, agricultural, or open space lands to urban uses or changes in land use type. • Compatibility of land uses with adjacent communities. • Conversion of farmland/ prime agricultural soils to urban uses. • Impacts to local roadways and intersections which would result in unacceptable LOS. • Increased volumes on local roadways. • Public transit capacities would be inadequate to meet increased traffic demand and transit demand. • Compliance with regional air quality plan and federal air quality standards. • New emissions generated by new development would increase air pollution and cause deterioration in regional air quality. • Significant increase in noise for some existing residents from increased traffic, recreational activities, and commercial and industrial uses. • Development would require additional law enforcement officers, equipment & facilities. • Development in rural/hilly areas would increase the potential risk for wildland fires. • Need for additional emergency medical services, fire fighters, equipment & facilities. • Demand for school facilities may exceed available capacity, and facilities may be degraded. • Increased need for library facilities. • Need for new parks & recreational facilities and/or managed open space. • Increased demand for, water supply & water service extensions. • Increased demand for supply, treatment and distribution facilities for wastewater. • Generation of significant amounts of solid waste, including demand for a new County landfill site. • Growth in population and employment could lead to possible damage, destruction, or removal of recorded and unrecorded cultural resources. • Future development has the potential to adversely affect historic resources. • Residential, commercial and industrial growth under the plan would increase energy consumption. • The impacts of increased population and jobs occur as secondary impacts. • Increased need for housing units, particularly affordable housing units, as population increases. • Substantial alteration of Valley's visual character. • Potential for structural damage and injury or loss of life due to impacts from strong groundshaking, including liquefaction. • Grading and excavation will permanently change the ground surface relief. • Increased risk of pollution from the use, storage, and treatment of hazardous materials. • Increased demand for hardrock and aggregate resources. • Short-term erosion and associated sedimentation potentials, with impacts to water quality. • Impacts to groundwater by reducing supply due to interruptions of recharge and upstream retention of surface flow. • Increase of urban runoff pollutants and degradation of existing water quality. • Increase in quantity of runoff, leading to increased flooding hazards. • Permanent direct habitat loss and accompanying reduction or elimination of dependent wildlife, including some special status species. • Permanent loss of significant habitat (creeks, vernal pools, swales, riparian habitat, freshwater marshes, native grasslands, significant trees, etc). • Cumulative direct loss of wildlife habitat.

TABLE 5-18 (Continued)
SIGNIFICANT IMPACTS OF GENERAL PLAN DEVELOPMENT
ASSOCIATED WITH THE CITY OF SONOMA

City of Sonoma
Less than Significant Impacts
• Changes to Land Use Designation, map, and policies. • Impacts on land use character and existing pattern of development. • Impacts to agriculture. • Compatibility with existing land uses. • Growth inducing impacts on land use or visual resources. • Impacts to population based on ABAG's growth projections. • Impacts on housing, employment, and jobs/ housing balance. • Impacts on pedestrian and bicycle paths, lanes, and rotes. • Increased demand for schools parks, or other public facilities. • Impacts from groundshaking on new development. • Increased vehicular noise, and traffic noise level compatibility with future development of adjacent land. • Increases in stationary noise. • Consistency with applicable air quality plans and air Quality standards. • Consistency with population increases and VMT projections. • Increased risk of earthquake hazards for new development. • Impacts from hazardous materials and waste.

SOURCE: City of Sonoma, 2006b

Mitigation Measures (Sonoma County)

Mitigation is identified in the EIR to minimize or reduce the impacts cause by implementation of the Sonoma County General Plan. As shown in **Table 5-19**, some impacts can be mitigated to a less than significant level, while others, despite mitigation, will remain significant or significant and unavoidable. The environmental effects of growth most commonly identified as significant and unavoidable in the service area are land use conflicts, increased traffic impacts, impacts to public utilities and services, including water supply, wastewater capabilities, and solid waste disposal. The mitigation provided for these impacts include a series of efforts and policies to be implemented.

For Sonoma County, increased short-term and long-term erosion potential can be mitigated to less than significant levels by preparing a grading and design plan that includes an erosion control and rehabilitation plan, restricting location of projects to slopes of 30 percent or more, and maintaining the natural topography of the project site.

For example, the impacts to agricultural resources are targeted by maintaining an Urban Growth Boundary to limit urban expansion, establishing agricultural zoning districts, and establishing densities and parcel sizes to protect soils for continued agricultural use. Compatibility of land uses with adjacent communities is implemented through new policies in the General Plan.

TABLE 5-19
SIGNIFICANT IMPACTS FROM GENERAL PLAN DEVELOPMENT ASSOCIATED WITH SONOMA COUNTY

Sonoma County
Significant But Mitigable Impacts
• Convert farmland/prime agricultural soils to urban uses. • Impacts to local roadways and intersections which would result in unacceptable LOS. • Increased volumes on local roadways. • Development would require additional law enforcement officers, equipment & facilities. • Need for additional emergency medical services, fire fighters, equipment & facilities. • Water demand from urban development could exceed the existing SCWA entitlement. • Increased demand for, water supply & water service extensions. • Increased demand for supply, treatment and distribution facilities for wastewater. • Growth in population and employment could lead to possible damage, destruction, or removal of recorded and unrecorded cultural resources. • Future development has the potential to adversely affect historic resources. • Increased short-term and long-term erosion potential. • Structural damage from soil properties. • Short-term erosion and associated sedimentation potentials, with impacts to water quality. • Increase of urban runoff pollutants and degradation of existing water quality. • Increase in quantity of runoff, leading to increased flooding hazards. • Increased sedimentation and runoff from construction activities • Permanent direct habitat loss and accompanying reduction or elimination of dependent wildlife, including some special status species. • Permanent loss of significant habitat (creeks, vernal pools, swales, riparian habitat, freshwater marshes, native grasslands, significant trees, etc). • Development could preclude future restoration of special habitats (native grasslands, oak savannas, wet meadows, vernal swales, and vernal pools). • Cumulative direct loss of wildlife habitat.
Significant and Unavoidable Impacts
• Substantial alteration of Valley's visual character.
Less than Significant Impacts
• Impacts from growth and concentration of populations • Increased demand for transit services. • Impacts to air traffic safety. • Conflict with alternative transportation. • Decreased parking capacity or emergency access. • Safety risk from transportation system design. • Impacts to noise sensitive development from roadway noise, airport noise, or stationary noise. • Impacts to water quality as a result of new development. • Increased soil erosion and sedimentation as a result of construction activities for new development. • Increase sewer- and septic- related water quality problems. • Increased flood risk as a result of storm drainage alteration. • Placement of housing within 100-year flood hazard areas. • Impacts on jurisdictional wetlands. • Conflict with local biological resource protection ordinances. • Conflict with HCP or NCCP. • Exposure of new development to expansive soils or soils unsuitable to support septic systems.

TABLE 5-19 (Continued)
SIGNIFICANT IMPACTS FROM GENERAL PLAN DEVELOPMENT
ASSOCIATED WITH SONOMA COUNTY

Sonoma County
Less than Significant Impacts (cont.)
• Conflict with HCP or NCCP.
• Loss of availability of known mineral resources.
• Conversion of agricultural land to non-agricultural uses.
• Impacts to agricultural processing and support uses.
• Impacts as a result of land conversion to support agricultural tourism.
• Conversion of timberland to non-timber uses.
• impacts to community separators, scenic landscape units, scenic corridors, and scenic highways.
• Visual impacts in other urban or rural areas.
• Increased energy consumption for new land uses or development patterns.
• Increased energy consumption from building construction and retrofit.
• Exposure to population from release of hazardous materials, including areas near airports.

SOURCE: Sonoma County, 2006

Measures to mitigate some other impacts include the following:

- *Traffic*: Install road improvements along certain roads and specific intersections and integrate bicycle and pedestrian corridors with local and county-wide transit systems.

- *Traffic and Air Quality*: Identify and implement new transit opportunities, mixed-use development, and foster interagency cooperation to integrate air quality planning efforts with transportation planning. Install buffer zones and setbacks to reduce the impacts from air quality and noise on sensitive receptors.

- *Public Services and Utilities*: Expand the law enforcement staff, facilities, and equipment, and continue to prioritize efforts; evaluate fire and emergency services, incorporate California Department of Forestry safety standards, and prepare a countywide fire services master plan. Require new development to pay a fair share of new facilities and expanding existing facilities. Promote water conservation and recycling, and verify the ability of water supplies to serve new development. Increase reclaimed water use and implement programs identified in the Solid Waste Management Program.

- *Cultural Resources*: Conduct archaeological field surveys, evaluate sites containing historic structures, and County Landmarks Commissions.

- *Visual Resources*: Preserve scenic vistas, retain prominent features on project sites, and eliminate commercial and industrial uses in community separators.

- *Hazardous Materials*: Prepare and implement Hazardous Materials Management Plan and conduct proper siting of hazardous facilities.

- *Mineral Resources*: Maintain an Aggregate Resources Management Plan and prioritize production sites to minimize adverse impacts from increased demand for aggregate resources.

- *Hydrology*: Implement best management practices, and Master Drainage and Flood Control Plan, and groundwater well monitoring activities.

- *Biological Resources*: Install setbacks for structures from the edge of marshes or wetlands, offsite mitigation, design criteria, and stream conservation area.

Napa SD

Under Phase 1, Napa SD would provide 2,137 AFY of recycled water to the MST Area for agricultural, golf course, and residential landscaping uses which would include approximately 521 AFY beyond the irrigation demands of existing vineyard uses in the MST area. This additional recycled water would be available to serve varying types of land uses within the MST area. Because this recycled water is above the amount needed to offset existing groundwater pumpage, it would be available to support irrigation of various land uses (e.g., agriculture, dairy, or residential uses), and could contribute to currently un-irrigated lands within the MST area converting to irrigated agriculture uses consistent with their General Plan designations.

Water supply within the MST area is primarily limited to groundwater pumpage, with a small amount of local surface diversions. Due to declining groundwater levels in the MST area, the County Board of Supervisors adopted the Napa County Groundwater Ordinance in 1996. The ordinance requires a groundwater permit for new water supply uses on properties, including residential development and agricultural development. The ordinance requires property owners to demonstrate no net increase in groundwater use onsite, and the ability to comply with application limits, established at 0.3 AF per acre per year for new residential and vineyard development. Existing vineyard developments that intend to re-plant or re-develop would be limited to an average 0.3 AF per acre of water per year, averaged over a three year period with no annual use exceeding the total average allotment by more than 15 percent. Introduction of recycled water could affect both agricultural and residential (second unit) development trends within the MST area, which have historically been limited due to groundwater supply issues.

Agricultural Development

Assuming a use rate of 0.25 AF per acre for vineyards in Napa, the 521 AFY of recycled water beyond current irrigation demands could be capable of supporting approximately 2,086 acres of vineyards in the MST area. The Napa County General Plan (2008) provides an estimate of approximately 10,000 to 12,500 acres of new vineyard development planned in Napa County. However, due to the limits on groundwater pumping in the MST Area, the General Plan assumed that the MST area would remain consistent with existing agricultural conditions.

Therefore, provision of recycled water at the levels identified in Phase 1 would have the potential to support 2,086 acres of vineyard in the MST area. This would represent a potential 20 percent increase in vineyard acreage beyond that considered by the Napa County Board of Supervisors in approving the General Plan. It should be noted that the existing un-irrigated parcels within the MST

area are not restricted from agricultural uses that are consistent with their General Plan and Zoning designations, and that are in conformance with the Napa County Groundwater Ordinance, which provides for a usage rate of 0.3 AF per acre per year, and requires land owners to demonstrate no-net increase and fair-share practices. Therefore, the availability of an alternative supply to groundwater could be one of several contributing factors that would allow lands that are currently un-irrigated to be placed in irrigated agriculture, consistent with their General Plan land use designations.

Actual development of vineyards within the MST area would be subject to a number of requirements and ordinances established under the Napa County General Plan, including the restriction of vineyard development on slopes in excess of 30 percent. These requirements and ordinances are identified below.

- County Code Section 18.108.060 states that no construction, improvement, grading, earthmoving activity or vegetation removal associated with the development or use of land shall take place on those parcels or portions thereof having a slope of 30 percent or greater (i.e., approximately 325.5 acres in the MST area) are prohibited without an exemption or exception.

- Vineyards are allowed in all zoning districts within the MST area except within all Residential Single (RS) districts (RS:UR, RS:B-1, RS:B-2, and RS:B-5) (approximately 290.1 acres) and areas zoned Planned Development (PD) (approximately 761.8 acres).

- New vineyards that involve conversion of any drainage by 5.5 percent or greater (Hardman Creek and Tulucay Creek in the MST area) or are located on slopes averaging more than 15 percent, requiring submittal of an erosion control plan application which is subject to environmental review.

- In addition to any floodway and floodplain regulations, construction of structures, accessory structures, earthmoving, grading or removal of vegetation or agricultural uses of land are prohibited within stream setbacks pursuant to County Conservation Code Section 18.108.025.

- The County requires that all vineyard projects demonstrate that there is adequate water available prior to approval.

- Additional constraints may be identified by County required technical reports/surveys, including geotechnical reports, biological reconnaissance and floristic surveys, archaeological study, and Phase I water availability studies.

It is likely that these requirements, as well as others, would reduce potential secondary impacts related to vineyard development in the MST area to a less than significant level. Secondary effects related to development under the Napa County General Plan, including development of vineyards, are summarized in **Table 5-20**. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided. Potential secondary effects relating to vineyard development within the MST area would be consistent with those identified in the Napa County General Plan EIR, and may include, but not be limited to: loss of sensitive biotic communities, disturbance or loss of special status plant and animal species, obstruction to wildlife movement, migratory corridors or plant dispersal opportunities, water

TABLE 5-20
IMPACTS ASSOCIATED WITH NAPA COUNTY GENERAL PLAN IMPLEMENTATION

Napa County
Significant But Mitigable Impacts
• Conversion of State designated Important Farmland. • Loss of County designated agricultural land* • Impacts to roadway safety and emergency access. • Conflicts with existing alternative transportation policies and programs, and increased demand on transit services. • Additional demand for parking facilities due to new development and reduction of parking from roadway changes. • Disturbance or loss of special status plant and animal species. • Obstruction to or loss of wildlife movement, migratory corridors, and plant dispersal opportunities. • Conflict with Conservation regulations, ordinances and policies. • Impacts from soil erosion, sedimentation on water quality, and hydrologic alteration to fisheries. • Groundwater interactions with surface water flows. • Direct and indirect impacts to wildlife habitat. • Compatibility between noise and land use. • New development exposure to groundborne vibration. • Compatibility of aircraft noise and land use. • Short-term emissions from grading, construction, and operation. • Impacts from equipment related to construction and agricultural odors • Impacts from release and exposure to hazardous materials • Airport hazards. • Interference with an adopted Emergency Response of Evacuation Plan. • Disturbance or loss of sensitive biotic communities • Impacts of development on water quality associated with proposed ministerial projects. • Well competition and adverse well interference. • Structural damage from expansive soils. • Changes to drainage patterns leading to increased runoff, streambank erosion, hillside erosions, and flood risk. • 100-year flooding risks. • Impacts to archeological and paleontological resources. • Increased wastewater and need for sewer treatment and conveyance.
Significant and Unavoidable Impacts
• Conflicts with agricultural zoning and Williamson Act Contracts. • Population, housing, and employment increases exceed ABAG projections. • Increased travel demand, insufficient level of road service, regional traffic growth. • Loss of sensitive biotic communities. • Increased volume of project-generated traffic noise. • Impacts from roadway improvements on noise-sensitive uses. • Consistency with air quality regulations. • Conflicts with particulate matter attainment efforts. • Exposure to air toxic contaminants. • Increase in long-term atmospheric greenhouse gas emissions. • Impacts from seismic groundshaking on infrastructure • Impacts from seismic related ground failure. • Landslide damage to roadway infrastructure. • Subsidence and settling. • Reduction in groundwater supply and increased overdraft conditions.

TABLE 5-20 (Continued)
IMPACTS ASSOCIATED WITH NAPA COUNTY GENERAL PLAN IMPLEMENTATION

Napa County
Significant and Unavoidable Impacts (cont.) • Impacts to historic architectural resources. • Need for fire protection and emergency services. • Need for additional law enforcement officers and facilities. • Impacts to water supply and water quality. • Increased demand for park and recreational facilities. • Degradation of scenic resources and the visual character of the area. • Increase in daytime glare and nighttime lighting.
Less Than Significant Impacts • Agricultural and urban interface conflicts. • Division of established communities and land use conflicts. • Conflicts with relevant land use plans, policies of regulations. • Job Housing Balance. • Displacement of a substantial number of persons or housing. • Increase in project-generated noise sources • Increase in project-generated construction noise • Carbon monoxide concentration along roadways. • Impacts from transport of hazardous materials • Wildland fire. • Structural damage from expansive soils. • Septic system capacity. • Increased mineral extraction. • Increased non-point source pollution from urban runoff. • 100 year flood hazard areas • Need for solid waste services. • Impacts to electric and natural gas resources. • Need for social services. • Structural damage from expansive soils.

* Impact to County designated agricultural land would be considered Significant and Unavoidable if Measure J for the new growth boundary for American Canyon and redesignation of lands near Angwin is successful.

SOURCE: Napa County, 2008a

quality impacts from sedimentation, direct impacts to habitat, short-term emissions from grading and construction, potential increases in soil erosion and sedimentation due to construction, water quality impacts associated with proposed discretionary processes for vineyard development projects, changes to drainage patterns, and 100-year flooding risks.

However, because the potential for vineyard development in the MST area was not considered as part of the General Plan approval, the secondary effects could be beyond those considered by the Napa County Board of Supervisors in approving the General Plan.

Implementation of **Mitigation Measure 5-1a,** identified at the end of this section, would condition Napa SD and Napa County to implement the reduced **MST Local Option,** rather than the larger Phase 1 MST Project. This would ensure that recycled water is provided at levels that are consistent with current agricultural practices, and that recycled water is used to offset existing groundwater pumpage. Facilities would be sized to serve up to 1,400 AFY to existing uses within the MST area. Additional service to parcels not currently under agricultural production would be subject to approval by the County Conservation, Development and Planning Department and the Board of Supervisors.

Residential Development

Within the context of the Groundwater Ordinance, provision of recycled water to the MST area would provide an alternate water supply to groundwater pumping. This alternate supply could be used by parcel owners to offset current groundwater pumpage for irrigation, and could result in an increase in applications for additional groundwater permits under the Groundwater Ordinance.

Second dwelling units are allowed within the Agricultural Watershed (AW), Residential County (RC), and Residential Single (RS) zoning districts. Currently, there are 1,917 parcels within the MST Area that carry these zoning designations, and therefore allow for construction of second units. Analysis of existing units per parcel by Napa County Planning Department indicates that 406 parcels within the MST would have the potential to construct a second unit (maximum 1,200 square feet). Under a worst case scenario, provision of recycled water to the MST Area could result in applications to develop 406 parcels with second units, based on the use of recycled water as a groundwater offset to demonstrate no net increase in groundwater use. This is not considered significant in the context of the current zoning for these properties, which provides for second units in conformance with the Napa County Zoning Ordinance. Development of second units would be subject to the requirements of the Napa County General Plan and Zoning Ordinance.

While project implementation would not induce or alter growth trends in the MST Area, it would, as part of the overall water supply picture, enable secondary effects associated with urban and agricultural development under the approved General Plans to occur. Tables 5-20 summarize the secondary effects of growth identified under the Napa County General Plan. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided.

Mitigation Measures (Napa County)

The environmental effects of growth most commonly identified as significant and unavoidable in the service area are land use conflicts, increased traffic impacts, impacts to public utilities and services, including water supply, and fire and law enforcement services. The mitigation provided for these impacts include a series of efforts and policies to be implemented.

- *Land Use*: Evaluate rezoning and development to avoid conversion where feasible. Where conversion is unavoidable long-term preservation of equal acreage of other farmland must be designated. To mitigate the need for more housing units, an approval process for multi-

family residential projects will be established to allow development based on criteria. Land use conflicts with the airport and surrounding areas will be mitigated by prohibiting incompatible uses in the ALUC "D" Zone.

- *Biological Resources*: Conduct biological resources evaluation, preserve habitat and connectivity of habitat, provide replacement habitat, restore and replant native plant species, and implement a Noxious Weed Ordinance. Require fencing standards for vineyard developments. Establish a Fisheries monitoring Program, a policy that requires erosion control and restoration of impacted areas, and prohibits stream bed and streambank alteration or removal of riparian vegetation.

- *Noise*: Establish noise-related compatibility criteria, notify residents of agricultural-related noises, evaluate the potential for noise related conflict, reduce vibration sensitive development, and establish buffers for Syar Quarry. Conduct noise analysis when road improvements may cause impacts to sensitive receptors to prescribe barrier features. Acceptable noise levels will be established for sensitive receptors (schools, hospitals).

- *Public Services*: Implement policies that require new facilities and adequate access to facilities, consultation with emergency agencies, compliance with fire safety standards and evacuation plans, and availability of alternate power sources to be used during emergencies. Require new development to verify access to wastewater services prior to approval of the project. Require dedication of more open space and trails, and require fees from new developments.

- *Traffic*: Establish standards for adequate level of service on roads, prepare traffic analyses prior to approving projects, require new development to pay a fair share for road improvements, encourage alternative forms of transportation, provide transit facilities for future development, and provide bicycle lanes during road improvements. The General Plan will require that new development be concentrated so densities can support development of transit services and pedestrian facilities. Parking is also identified as a significant impact, but mitigation that requires adequate parking to meet demand and replacement parking will minimize the impact.

- *Air Quality*: Include provision of incentives energy efficient forms of transportation, enforcement tailpipe emissions standards, evaluation of project-specific air quality impacts, and establishment of emission standards for county vehicles. Other measures include dust control, demolition requirements for lead and asbestos, construction emission control measures, and buffer and control requirements for odor and Toxic Air Contaminants.

- *Visual resources*: Continue the Napa County Viewshed Protection Program, retention of trees along public roadways, implement the standards for transmission lines, and requirements for new development to be compatible with visual standards. Landscape improvements along roadways, limited street lighting, reduce use of reflective building materials mitigate the impacts from glare and night lighting.

- *Cultural resources*: Conduct onsite cultural resource investigations by qualified archaeologists, followed by immediate notification to the County Planning Department.

- *Hydrology*: Implement the Napa County Conservation Regulations and a Stormwater Management and Discharge Control Ordinance, develop an erosion control plan, establish water quality monitoring, enforce stream setbacks, and implement best management practices for agricultural and resources practices (i.e. forestry practices, etc.). To reduce competition of groundwater well use, hydrogeologic studies must be conducted for all new

wells to determine effect on adjacent wells. No new wells will be drilled in areas that experience saltwater intrusion. Expansion of land uses that could result in drainage impacts and runoff require mitigation measures like a policy that requires post-development conditions not to increase flood events, comply with the Basin Plan, and include drainage improvements to prevent increased flooding impacts.

- *Geology*: Require seismic, geologic evaluations for all projects. Projects that are located in susceptible areas will not be approved. Measures to prevent damage from landslides include planting on slopes, grading requirements for slopes over 15 percent, hillside lot requirements.

- *Utilities*: Impacts to water supply would also be significant and unavoidable despite requiring new projects to demonstrate adequate water supply availability. Since the General Plan does not prohibit continued vineyard development, standards for mitigation of impacts to biotic communities and oak woodlands should be established, impacts to wetlands should be avoided, and stream setbacks will be required

5.4.4 Alternative 1: Basic System (Program level)

Compared to the CEQA Baseline, the Basic System projects would provide 83 miles of new pipeline, 2,158 HP of pumping capacity, treatment facilities providing 7.5 mgd of tertiary capacity, and 1,020 AF of storage. This would make available 6,455 AFY of recycled water for urban, agricultural, and environmental uses. Compared to the No Action Alternative (NEPA Baseline), Basic System would provide 65 miles of new pipeline, 1,243 HP of pumping capacity, treatment facilities providing 7 mgd of tertiary capacity, and 955 AF of storage and would provide 6,655 AFY of additional recycled water for use.

LGVSD

No additional facilities or service beyond those identified in Phase 1 would be provided by LGVSD under the Basic System. Therefore, impacts would be equivalent to those identified under Phase 1.

Novato SD

The Basic System would include construction of an additional 2.6 miles of pipeline to the Petaluma River. No additional service is provided by this pipeline. Therefore, impacts would be equivalent to those identified under Phase 1.

SVCSD

The Basic System would increase service to the Sonoma Valley service area. Impacts would be contained within and consistent with those identified for Phase 1. Therefore, impacts would be equivalent to those identified under Phase 1.

Napa SD

The Basic System would include facilities to provide 1,055 AFY to the Carneros East service area. Recycled water supplies would be used to offset existing groundwater and local surface water uses for irrigation, as the Carneros East area has not been officially identified as a groundwater deficient area and therefore is subject to less restrictive requirements than the parcels in the MST area under the Napa County Groundwater Ordinance. As such, the provision of recycled water is not anticipated to affect the rate, level, or distribution of agricultural production in the Carneros East area.

5.4.5 Alternative 2: Partially Connected System (Program level)

Compared to the CEQA Baseline, the Partially Connected System would provide 139 miles of new pipeline, 3,454 HP of pumping capacity, treatment facilities providing 15.9 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Partially Connected System would provide 122 miles of new pipeline, 2, 542 HP of pumping capacity, treatment facilities providing 15.4 mgd of tertiary capacity, and 2,155 AF of storage. This would make available 11,250 AFY of recycled water for urban, agricultural and environmental uses.

The secondary impacts of growth associated with the proposed facilities under the Partially Connected System would be equivalent to and greater than the impacts discussed for the Basic System, in proportion to the facilities constructed under this alternative. A discussion of Member Agency service areas is provided below.

LGVSD

The Partially Connected System would extend service from LGVSD to the Peacock Gap Golf Course in San Rafael, making approximately 409 AFY of recycled water available for irrigation uses. **Table 5-21** summarizes the secondary effects of growth identified under the San Rafael County General Plan. A discussion of mitigation measures and policies identified to reduce potential impacts to the degree feasible is also provided.

Mitigation Measures (San Rafael)

The EIR lists the following measures to mitigate impacts that are identified as significant. The mitigation measures are described according to the resource areas.

- *Air Quality*: Create a setback for projects proposed within 500 feet of large highways and include a health analysis and modeling to minimize impacts to sensitive receptors from emission of odors and toxic contaminants.

- *Hazardous Materials*: Implement a new program to require the City of San Rafael to survey existing industrial facilities within quarter-mile of schools to determine the presence of hazardous materials and risk of a release to mitigate impacts from hazardous materials or waste near schools. Restrict siting of facilities that could increase risk of release in close vicinity of schools.

TABLE 5-21
IMPACTS ASSOCIATED WITH SAN RAFAEL GENERAL PLAN IMPLEMENTATION

City of San Rafael
Significant and Mitigable Impacts
• Impacts from odors and toxics. • Impacts from nighttime lighting and glare. • Impacts to special status plant and animal species. • Direct and indirect impacts to sensitive natural communities. • Exposure of people and structures to potential adverse seismic effects (groundshaking). • Exposure of people or structures to seismic related ground failure. • Impacts to property and structures from ground subsidence hazards. • Impacts from construction of septic tanks on soils incapable of supporting these systems.
Less Than Significant Impacts
• Conflict with applicable land use or other plans. • Incompatible land uses and changes to neighborhood character. • Growth and concentration of population. • Employment growth rate. • Jobs-to-housing ratio. • Increased demand for bicycle routes, pedestrian facilities, and transit services. • Consistency with the Clean Air Plan. • Consistency with the Clean Air Plan Transportation Control Measures. • Increased traffic noise. • Increased exposure from stationary noise sources. • Increase airport noise. • Impacts to future noise sensitive development. • Demand for fire and emergency services. • Increased potential for wildland fires. • Exposure to underground hazardous wastes. • Demand for school services. • Wastewater treatment capacity- north of Puerto Suello Hill. • Potential to exceed landfill capacity. • Increased demand for electricity, natural gas, and gasoline. • Impacts on archaeological and prehistoric resources. • Impacts on historic or cultural resources. • Impacts to scenic vistas and visual resources. • Alteration of the visual setting and character of the City. • Conflicts with adjoining development relative to height. • Impacts to federally protected wetlands. • Restriction of movement of native wildlife. • Loss of habitat and invasive plant species introduction. • Adverse effects from expansive soils. • Increase in loading of petrochemical contaminants, heavy metals, and pesticides into drainageways. • Increases in impervious surface cover and impact to groundwater resources. • Incremental increase in project-induced erosions and sedimentation. • Increases in peak flow rates on flooding and/or stormwater drainage system capacity. • Exposure of new development to levee failure. • Need for expanded stormwater drainage system.

TABLE 5-21 (Continued)
IMPACTS ASSOCIATED WITH SAN RAFAEL GENERAL PLAN IMPLEMENTATION

City of San Rafael
Less Than Significant Impacts (cont.)
• Exposure of people or structures to flooding hazards. • Risk of inundation by seiche, tsunami, or mudflow. • Conversion of farmland to non-agriculture use.
Significant and Unavoidable Impacts
• Level of service at various intersections. • Impacts to on-street parking along various streets. • Increased rail noise. • Release of hazardous materials. • Exacerbation of deficiency in park facilities. • Demand for police services that exceeds existing capacity. • Demand for library services. • Wastewater Treatment capacity- south of Puerto Suello Hill. • Potential for demand to exceed water supplies. • Exposure of people or structures to landslide events.

SOURCE: City of San Rafael, 2004.

- *Aesthetics*: Prepare a lighting plan for parking lots to minimize impacts from new sources of light or glare and nighttime lighting. A lighting plan would include provisions to shield light sources from off-site view, downcast lights, prevent light from escaping, use low intensity, indirect light sources, and restricting mercury, metal halide, and other intense bright lights.

- *Biological Resources*: Implement programs that require surveying of vacant sites to determine presence or absence of species, on-site preservation or off-site compensation for lost habitat (i.e., easements), and restoration efforts to mitigate impacts to biological resources. The Oak Savanna and Woodland Habitat Protection Program would mitigate the loss of sensitive natural communities by requiring compensation.

- *Geology*: Implement the following measures:

  - A General Plan policy that would require building inspections, inspections of other facilities, storm drains, levees, freeways, and other infrastructure, and require the Community Development Department to develop a list that identifies and prioritizes hazardous facilities;
  - A policy that directs the City to coordinate with the Intergovernmental Panel on Climate Change to determine sea level rise and needs for levee improvements;
  - A program for levee upgrading;
  - An amendment to the shoreline embankments policy that includes rip-rap inspection and erosion protection; and

- A General Plan policy to discourage the use of septic systems unless there is no other alternative, in which case additional requirements would need to be met.

- *Mitigation Measures identified for impacts that would remain significant and unavoidable*: SMART shall conduct a detailed noise assessment and implement mitigation to reduce noise impacts to an acceptable level for any rail project within its right-of-way.

  A new policy that requires remediation and cleanup in order to develop on sites where hazardous materials have impacted soil or groundwater will be required to mitigate releases of hazardous materials.

- *Public Services: Police*: Determine the existing and projected facility needs of the police departments, obtain funding for improvements, and construct additional facilities. Additional facilities that would need to be constructed are specified in other mitigation measures to improve drainage, sediment control, and particulate matter reduction.

- *Parks:* Construct recreational facilities, establish creek and drainageway setbacks, and reduce runoff.

- *Library Services*: Implement policies that would limit the impacts from new library facility construction, like setbacks, runoff reduction, and sediment control.

- *Water Services*: To meet projected water demand, MMWD will implement measures to promote conservation, research new water supplies (like desalination), and construct necessary infrastructure.

- *Wastewater Services:* Determine the need and cost of improvements, analyze storage alternatives, increase facilities, and assess collection systems.[5]

- *Construction Impacts*: Implement creek and drainageway setbacks, reducing runoff and sedimentation, and controlling particulate matter pollution.

The Partially Connected System would also include provision of supplies from LGVSD north to the Sears Point area via an approximately 6.5 mile pipeline connection to Novato SD facilities. Please refer to the discussion of growth issues in the Sears Point area in the Novato SD discussion, below.

Novato SD

The Partially Connected System would include provision of 968 AFY of recycled water to the Sears Point area from Novato SD. These supplies would be used to offset existing potable water use in the area. As discussed above in Section 5.3.1, Novato SD plans for expanded recycled water use in the area. Potential recycled water users include development on Hamilton Air Force Base and other users along Highway 101. Sears Point area under the proposed project could be a potential user area. The impacts would be equivalent to those identified under the Basic System.

[5] Although wastewater flows would not exceed the treatment capacity of the LGVSD facilities, wastewater flows generated south of Puerto Suello Hill will exceed the capacity of Central Marin Sanitation District facilities.

SVCSD

The Partially Connected System would include provision of recycled water to the Southern Sonoma Valley service area, providing approximately 1,662 AFY of recycled water to existing agricultural users for groundwater and surface water offset. Impacts would be contained within and consistent with those previously identified in the Sonoma County General Plan in Table 5-19. Therefore, impacts would be equivalent to those identified under the Basic System.

Napa SD

The Partially Connected System would include extension of service north in MST area, north in the Carneros East area, and east of the Napa SD Soscol WWTP, providing approximately 4,221 AFY of recycled water. Impacts would be contained within and consistent with those previously identified in the Napa County General Plan in Table 5-20. Therefore, impacts would be equivalent to those identified under the Basic System.

5.4.6 Alternative 3: Fully Connected System (Program level)

Compared to the CEQA Baseline, the Fully Connected System would provide 153 miles of new pipeline, 5,021 HP of pumping capacity, treatment facilities providing 20.8 mgd of tertiary capacity, and 2,220 AF of storage. Compared to the No Action Alternative (NEPA Baseline), the Fully Connected System would provide 135 miles of new pipeline, 3, 907 HP of pumping capacity, treatment facilities providing 20.3 mgd of tertiary capacity, and 2,155 AF of storage.

LGVSD

No additional facilities or service beyond those identified in the Partially Connected System would be provided by LGVSD under the Fully Connected System. Therefore, impacts would be equivalent to those identified under the Partially Connected System.

Novato SD

Under the Fully Connected System, the service indentified in the Partially Connected System to the Southern Sonoma Valley would be provided by Novato SD instead of SVCSD. The amount of recycled water would be 1,587 AFY and would allow SVCSD to provide service north to the Central Sonoma Valley. Impacts would be contained within and consistent with those previously identified in the Novato General Plan in Table 5-17. Therefore, impacts would be equivalent to those identified under the Partially Connected System.

SVCSD

Under the Fully Connected System, SVCSD would extend service north to users in the Central Sonoma Valley service area. This would provide an additional 1,511 AFY to offset existing groundwater and local surface water uses. Impacts would be contained within and consistent with those previously identified in the Sonoma County General Plan in Table 5-19. Therefore, impacts would be equivalent to those identified under the Partially Connected System.

Napa SD

No additional facilities or service beyond those identified in the Partially Connected System would be provided by Napa SD under the Fully Connected System. Therefore, impacts would be equivalent to those identified under the Partially Connected System.

Mitigation Measures

> **Mitigation Measure 5-1a:** In order to maintain consistency with the Napa County General Plan, Napa County and Napa SD will approve the MST Local Options 1 and/or 2. This will provide approximately 530 AFY of recycled water that would be available for the existing users in the MST area. Trunk facilities may be sized to accommodate service of up to 1,400 AFY to existing agricultural irrigators only. Any expansion of service beyond the 1,400 AFY or provision of service to new land uses would be subject to approval by the County Planning Department and the Napa County Board of Supervisors.

Impact Significance after Mitigation: Implementation of Measure 5-1a would avoid the potential for direct impacts relating to growth inducement in the MST area. However, provision of recycled water within each of the NBWRP services would contribute to secondary effects of growth associated with buildout under approved General Plans within each service area. Mitigation programs have been established for these impacts, however, some of these impacts may remain significant and unavoidable.

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CHAPTER 6
Alternatives Analysis

6.1 Introduction

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require that an Environmental Impact Statement (EIS) and an Environmental Impact Report (EIR) describe and evaluate a range of reasonable alternatives to a project or to the location of a project, which would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. This chapter describes the development of the project alternatives, presents the project alternatives, evaluates the alternatives for consistency with stated project objectives, summarizes and compares the environmental impacts and economic feasibility of the alternatives, in order to make recommendations on the environmentally superior alternative.

CEQ regulations require federal agencies to:

a. Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

b. Devote substantial treatment to each alternative considered in detail (reasonable alternatives), including the preferred alternative, so that reviewers may evaluate their comparative merits.

c. Include reasonable alternatives not within the jurisdiction of the lead agency.

d. Include the No Action Alternative. "No action" is defined as the most likely future that could be expected to occur in the absence of the project. Where this future is different from the existing conditions, the differences should be clearly defined.

The CEQA Guidelines set forth the following criteria for selecting alternatives:

1. ". . . [T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." §15126.6(b))

2. "The range of potential alternatives shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects." §15126.6(c)

3. "The specific alternative of 'no project' shall also be evaluated along with its impacts." §15126.6(e)(1)

4. "The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could meet most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making." §15126.6(f)

According to NEPA, alternatives considered, but not found to be technically feasible or reasonable, should be presented briefly, along with the reasons they were eliminated from further analysis. Examples of reasons for elimination are: (1) failure of the alternative to meet the requirements of the purpose of and need for the action, (2) the alternative cannot be technically implemented, (3) the alternative is prohibitively greater in cost or in environmental impacts than the other alternatives, or (4) the alternative cannot be reasonably implemented. A complete listing of all alternatives seriously considered or publicly discussed in the scoping process should be included.

In general, there are two types of alternatives that may be reviewed in an EIR: (1) alternatives *to* the project that are other projects entirely, or other approaches to achieving the project objectives rather than the project or modified project; and (2) alternatives *of* the project that include modified project components, such as alternative project sites or processes and/or modified facilities, layout, size, and scale. This chapter evaluates both types of alternatives in order to develop a reasonable range of alternatives for evaluation in this EIR/EIS and describes the alternatives of the project that were carried forward for further analysis. This chapter also describes alternatives to the project that were not discussed further and the reasons for which they were not carried forward for analysis.

6.2 Alternatives Development

The development of alternatives for the NBWRP was completed as part of the Feasibility Study process required under Reclamation's Title XVI Program. Alternatives development included three phases, as described below.

- In 2005, NBWRA prepared the *Phase 1 Engineering and Economic/ Financial Analysis Report* that represented the initial results of a recycled demand study in the project area, possible scenarios using different areas and facilities, and preliminary cost estimates.

- In 2006-2007, NBWRA prepared the *Phase 2 Engineering and Economic/ Financial Analysis Report* presented a more detailed engineering development and evaluation of best agreed alternatives.

- In 2008, as part of Phase 3, NBWRA completed the engineering and financial evaluation and the final feasibility report. The *Phase 3 Engineering and Economic/ Financial Analysis Report* or Phase 3 Feasibility Study refined the engineering evaluation and includes the economic analysis of alternatives and documentation of the financial capability of the Member Agencies. The Phase 3 Feasibility Study described the action area and the key management issues and needs within the action area, identifies recycled water opportunities in the action area, develops and analyzes alternative measures that could address the

identified water management needs, presents an economic and financial analysis of the project, and presents an overview of associated legal and institutional requirements (CDM, 2008).

Phase 3 Feasibility Study

NBWRA undertook a comprehensive planning process that first identified a wide range of preliminary alternatives for the Proposed Action and then screened this array for selection of alternatives that would be developed for detailed analysis. Criteria such as the ability to achieve Member Agency water management goals, to meet projected future water supply needs, and to maintain environmental and water quality directed the initial development of the alternatives (CDM, 2008).

The first step in the alternatives development process was to identify the broad characteristics that could be used to formulate alternatives. The initial alternatives were formed as combinations of options under the following characteristics:

- Existing and potential recycled water projects in the action area: Water and wastewater agencies in the action area developed several existing recycled water projects and identified recycled water projects for future implementation. Additional potential recycled water project areas were identified by grouping land uses either in major agricultural or landscaping areas or in areas between existing and proposed areas. Fifteen recycled water projects, including six new water reuse areas, were identified (see **Table 6-1**).

TABLE 6-1
RECYCLED WATER PROJECTS CONSIDERED

Existing Projects	Agency-Identified Projects	New Potential Water Reuse Areas
Sonoma Valley County Sanitation District Reuse Area	Peacock Gap Golf Course	Petaluma South
Marin Municipal Water District Reuse Area	North Marin Water District Urban Reuse Project	Southern Sonoma Valley
Stone Tree Golf Course Reuse Area	Sonoma Valley Recycled Water Project	Sears Point
	Carneros East	Central Sonoma Valley
	Milliken-Sarco-Tulucay Creeks Area	North Central Sonoma
	Napa Salt Marsh Restoration	Napa Valley

SOURCE: CDM, 2008

- Extent of the recycled water distribution network: The recycled water projects were grouped into alternatives based on different sizes and different connections of the future recycled water system. The options for the recycled water distribution system varied from virtually independent operation of each wastewater treatment plants (WWTP) to all WWTPs operating jointly serving demand throughout the entire action area. **Table 6-2** provides the six distribution system approaches that were studied.

TABLE 6-2
RECYCLED WATER PROJECTS CONSIDERED

Service Area Approaches	Features
Basic Regional System	Emphasis on local area near each WWTP
Regional Systems	Linkage of local systems to allow multiple treatment plants primarily in Petaluma/Novato and Napa/Sonoma.
Regional Systems with Ponds	Connect several WWTPs and add ponds for storage.
Expanded Regional System without Petaluma	Provide larger agricultural area, emphasis on environmental benefits to Napa salt marsh (Petaluma would not be served).
Expanded Regional System with Petaluma	See above. The area will include Petaluma.
Interconnected Regional System	Connect all five WWTPs and maximize reuse.

SOURCE: CDM, 2008

- Storage options to increase use of recycled water: Three options for water storage were developed to formulate initial alternatives.
  - *No New Storage*: The only storage available in the recycled water system would be existing storage at the WWTPs and a portion of existing individual landowner storage ponds.
  - *Partial Storage*: Storage would include existing storage at the WWTPs, some existing landowner storage ponds and new low-impact storage.
  - *Full Storage*: This option would include as much storage as needed to reuse all available recycled water supplies. New surface storage would be necessary.

The 15 recycled water projects (see Table 6-1) and six recycled water distribution systems (see Table 6-2) were evaluated with the six storage options (discussed above) to develop a total of 18 initial alternatives.

The next step in the alternatives development process was to screen the initial alternatives. The characteristics of the alternatives were examined to verify that they were technically, environmentally, politically, and legally feasible. The screening was based on the quantity of recycled water served, quantity of the discharge from the WWTP reduced, amount of storage required, and planning-level cost estimates.

Alternatives Identified but Not Considered Further

The alternatives not considered further include the "Regional System," "Expanded Regional System without Petaluma," and "Expanded Regional System with Petaluma" (CDM, 2008). The "Regional System" was rejected due to prohibitive costs and insufficient use of recycled water. The "Expanded Regional System without Petaluma" was similar to the Partially Connected System, but did not include Petaluma. Although Petaluma has declined participation in the Proposed Action, Petaluma's inclusion during the initial project development process was important to demonstrate regional coordination. The third alternative, the "Expanded Regional

System with Petaluma", included connection to Petaluma, but the design did not provide adequate storage for the anticipated recycled water demand

The NBWRA screened the 18 alternatives based upon storage options, cost, regional partnership opportunities, and system logistics to select three alternatives that would be carried forward to further analysis. Thus, the alternatives that are analyzed in this EIR/EIS in addition to the required No Project and No Action Alternatives (under CEQA and NEPA) are: the Basic System, the Partially Connected System, and the Fully Connected System.

6.3 Alternatives of the Project Analyzed in the EIR/EIS

The alternatives that were carried forward and analyzed in this EIR/EIS are described below:

No Project Alternative: Discussion of the No-Project Alternative must examine the existing conditions and reasonably foreseeable future conditions that would exist if the project were not approved (CEQA §15126.6(e)). Under the No Project Alternative, the NBWRA would not implement construction of facilities identified under the Proposed Action to provide a reliable recycled water distribution system to serve the water users in the LGVSD, Novato SD, SVCSD, and Napa SD service areas.

No Action Alternative: Consideration of the No Action Alternative is required under NEPA. The No Action Alternative represents a "future-without-project" scenario: a continuation of existing conditions for an estimation of the most reasonable future conditions that could occur without implementation of any action alternatives. The No Action Alternative assumes that there is no joint project among the Member Agencies. It represents the "current status" in which additional wastewater treatment capacity and water recycling occurs strictly from the implementation of local plans for expansion, and the potential need to develop additional potable water supplies continues to be a regional challenge. In general, each Member Agency would continue to implement individual water recycling projects, subject to the availability of funding and completion of the CEQA process. The No Action Alternative would likely result in a smaller increment of water recycling projects within the region. For example it is anticipated that SVCSD would implement only one of the four pipeline systems identified in the Sonoma Valley Recycled Water Project (SVRWP) EIR, based upon the ability to fund such construction. Additionally, the lack of federal funding may delay or preclude the implementation of individual planned projects, due to the need to increase user rates in order to provide funds for implementation.

Basic System: The Basic System would expand recycled water programs currently in operation within the Member Agency service areas. It is the most localized of the three alternatives and emphasizes the implementation of local recycled water projects. Each agency would put first priority on the delivery of recycled water to its local projects. Local projects include the NMWD Urban Reuse Project, the SVRWP, the Napa Salt Marsh Pipeline, and projects in the Napa Milliken-Sarco-Tulucay (MST) Creeks area and the Carneros East areas. All WWTP treatment and distribution systems are sized and designed to serve their respective local users. Interconnectivity between WWTPs would only occur between SVCSD and Napa SD to serve the Napa Salt Marsh Restoration Area. The Basic System would include implementation of a system consisting of 83 miles of pipeline, construction of facilities onsite at existing WWTPs to provide an additional 7.8 million gallons per day (mgd) of tertiary treatment capacity, and development of 1,020 acre-feet of

storage, primarily at existing or planned storage ponds at the WWTPs. In total, the Basic System would provide 6,655 acre-feet of new recycled water for irrigation use, and an additional 5,825 for habitat enhancement.

Partially Connected System: The Partially Connected System represents the median alternative. Each agency would put first priority on the delivery of recycled water to its local projects. Additional local projects include the Peacock Gap Golf Course area, further development of the NMWD Urban Reuse Project, the SVRWP, and projects in Napa MST, and the Carneros East areas. Interconnectivity between WWTPs would be expanded between Novato SD and LGVSD to serve the Sear's Point Area, in addition to the connection between SVCSD and Napa SD WWTPs. The Partially Connected System would provide 11,250 AFY of new recycled water for irrigation use and an additional 2,933 AFY for habitat enhancement. Under this alternative, SCWA would implement a system consisting of installation of 139 miles of new pipelines, construction of facilities onsite at the existing WWTPs to provide 15.9 mgd of tertiary treatment capacity, and development of approximately 2,220 acre-feet of storage, primarily at existing or planned storage ponds at the WWTPs.

Fully Connected System: The Fully Connected System would maximize the local and regional reuse of recycled water, and incrementally, would have the greatest facility requirements of the three alternatives considered. It would include all of the components described under the Partially Connected System in addition to pipelines to extend service and connect all four WWTPs. The Fully Connected System requires a total of 153 miles of conveyance pipeline, construction of facilities onsite at the existing WWTPs to provide an additional 20.8 mgd of tertiary treatment capacity, and development of approximately 2,220 acre-feet of storage, primarily at existing or planned storage ponds at the WWTPs. The Fully Connected System would provide 12,761 AFY of new recycled water for irrigation use, and an additional 3,085 AFY for habitat enhancement.

Table 6-3 summarizes the elements of each of the three alternatives.

6.4 Alternatives Analysis

In accordance with the CEQA Guidelines, the alternatives considered in this EIR include those that 1) could accomplish most of the basic objectives of the project, and 2) could avoid or substantially lessen one or more of the significant effects of the project. To provide the appropriate context for this alternatives analysis, the project objectives and key significant effects are summarized below.

6.4.1 Project Objectives

NBWRA developed the following objectives for the Proposed Action to promote the expanded beneficial use of recycled water in the North Bay region to:

- Offset urban and agricultural demands on potable supplies;
- Enhance local and regional ecosystems;
- Improve local and regional water supply reliability;
- Maintain and protect public health and safety;

TABLE 6-3
SUMMARY OF PROJECT COMPONENTS UNDER THE ACTION ALTERNATIVES

Project Components	No Action Alternative	Basic System	Partially Connected System	Fully Connected System
Pipeline (in miles)				
LGVSD	0.0	5.88	17.94	17.94
Novato SD	4.4	12.44	35.90	47.00
SVCSD	13.1	33.72	42.00	44.20
Napa SD	0.0	31.14	44.08	44.08
Total Pipeline	**17.5**	**83.00**	**139.00**	**153.00**
Pump Station (in horsepower)				
LGVSD	0.0	71	91	424
Novato SD	250	258	586	966
SVCSD	662	1,328	2,037	2,912
Napa SD	0.0	2,896	3,280	3,175
Total Pump Stations	912	**4,553**	**6,115**	**7,477**
Storage Capacity				
LGVSD	0.0	0.0	0.0	0.0
Novato SD	0.0	0.0	0.0	0.0
SVCSD	65.0	1,020.0	2,220.0	2,220.0
Napa SD	0.0	0.0	0.0	0.0
Total New Storage[(1)]	**65.0**	**1,020.0**	**2,220.0**	**2,220.0**
Tertiary Treatment Capacity Increase (million gallons per day)				
LGVSD	0.0	0.4	1.2	1.2
Novato SD	0.5	1.2	5.1	10.0
SVCSD	0.0	0.0	0.0	0.0
Napa SD	0.0	5.9	9.6	9.6
Total Tertiary Treatment Capacity Increase	**0.5**	**7.5**	**15.9**	**20.8**
Potable Offset (acre-feet per year)				
LGVSD	0	202	409	409
Novato SD	193	542	2,038	3,701
SVCSD	874	2,719	4,381	4,230
Napa SD	0	2,992	4,221	4,221
Total Potable Offset	**1,067**	**6,655**	**11,250**	**12,761**

[1] This total only represents new storage. The Proposed Action will rely on existing storage and retrofit existing facilities to accommodate storage needs. Please refer to Chapter 2, Project Description for a break down of new versus existing storage by alternative.

NOTE: The No Project Alternative would be equivalent to existing conditions and no project elements would be implemented, therefore not included in the table.

SOURCE: CDM, 2009

- Promote sustainable practices;
- Give top priority to local needs for recycled water, and;
- Implement recycled water facilities in an economically viable manner.

6.4.2 Significant Effects

Chapter 3, Environmental Setting and Impact Analysis, presents the impact analysis for the three project alternatives. No significant and unavoidable environmental impacts are anticipated

for projects under the Basic, Partially Connected, or Fully Connected Systems. Based on the analysis presented in **Chapter 3**, implementation of the Proposed Action could result in significant short-term construction and long-term operational impacts to aesthetics, air quality, biological resources, hazards and hazardous materials, water quality, land use, noise, public services and utilities, and traffic. The impacts would be reduced to a less-than-significant level by mitigation measures listed in **Chapter 3**. Provided below is a summary of the significant, but mitigable, environmental impacts identified by resource area that are considered in the evaluation of the alternatives to identify the alternative(s) that can avoid or reduce the environmental effects and still meet the basic project objectives.

There are no significant and unavoidable impacts anticipated for the Proposed Action, therefore the project alternatives are compared by assessing the impacts under each alternative to demonstrate environmental superiority. In general, the magnitude of significant impacts would be in proportion to the extent of facilities required under each of the project alternatives. Greater infrastructure involves greater construction activities or construction over a larger area for a longer duration as well as a greater extent of operational activities. **Table 6-4** summarizes the potentially significant, but mitigable impacts identified. In general, impacts would be the least for the Basic System, which has the least amount of infrastructure, and greatest for the Fully Connected System, which has the greatest amount of infrastructure. A summary of individual issue areas is provided below.

TABLE 6-4
SIGNIFICANT BUT MITIGABLE IMPACTS IN PROPORTION TO THE PROPOSED FACILITIES UNDER EACH ALTERNATIVE

Temporary/ Construction-Related Impacts	Long-Term Impacts
• Erosion-related water quality impacts or loss of topsoil. • Increased potential for fuels and hazardous material release into surface water. • Important Farmland: dust and disruption of irrigation. • Dewatering that could result in discharge of turbid waters into the storm drain systems/ creeks. • Temporary emissions of criteria pollutants. • Disturbance to recreational facilities. • Impacts to scenic corridors. • Disruption of utilities. • Disturbance of historical or cultural sites, including from ground borne vibration. • Increase in noise levels and vibration. • Exposure to and/ or release of hazardous chemicals. • Effect on response times of emergency providers. • Need for assistance in traffic management. • Wildland fire hazard.	• Increased surface area of impervious surfaces. • Permanent impact to visual character. • Risk from fault rupture, severe ground shaking, liquefaction, or earthquake induced landslides capable of causing injury, structural damage, pipeline rupture and service interruption. • Location on an unstable geologic unit / soil that that could result in landslide, lateral spreading, subsidence, liquefaction or collapse causing damage to structures and service disruptions. • Increased exposure of the public and structures to flooding. • Increased stormwater runoff. • Increases to ambient noise. • Increase in water/ sewer charges.

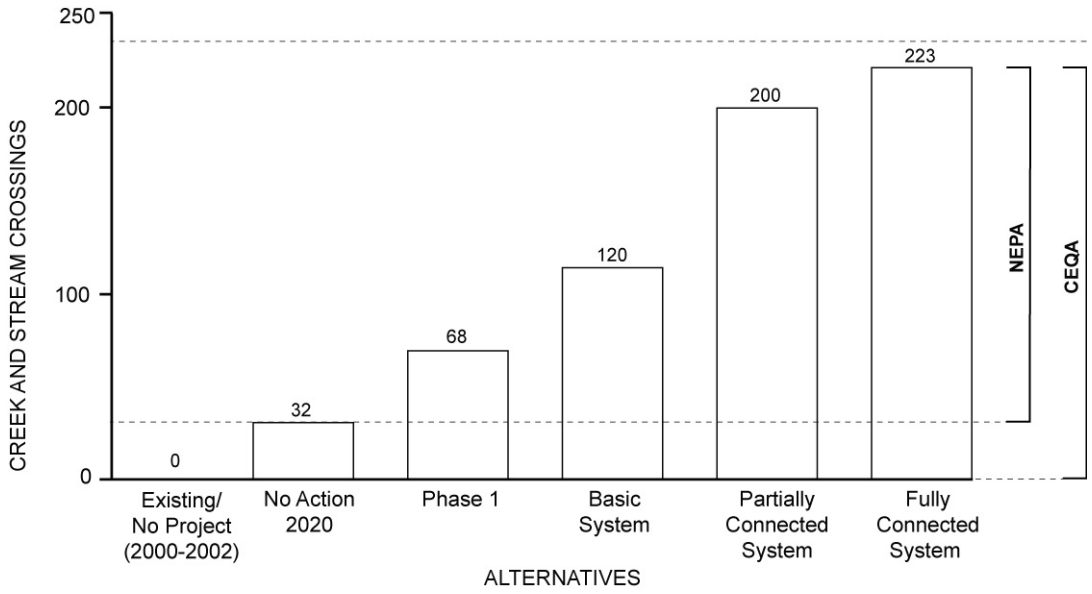
SOURCE: ESA, 2009.

Surface Hydrology

Based on the analysis conducted in **Section 3.2, Surface Hydrology,** potentially significant impacts under all the alternatives, including exposure of new facilities to flooding, increased impervious surface area, and alteration of storm flow patterns, would occur in proportion to the amount of facilities required under each alternative. The impacts would be mitigated to a less-than-significant level with incorporation of recommended mitigation measures. There would be no significant and unavoidable impacts on surface hydrology. A series of comparisons of stream crossings, discharge reduction, and number of facilities potentially impacted by sea level rise, which are generally in proportion to the amount of infrastructure, illustrates the differences in impacts for all the alternatives.

Chart 6-1 summarizes the number of stream crossings for the Basic System, Partially Connected, and Fully Connected Systems. Similarly, the Basic System would have the least amount of impervious surface area due to new facilities. Based on this comparison, the Basic System would require the least amount of stream crossings, and therefore cause the least impact on existing drainage patterns.

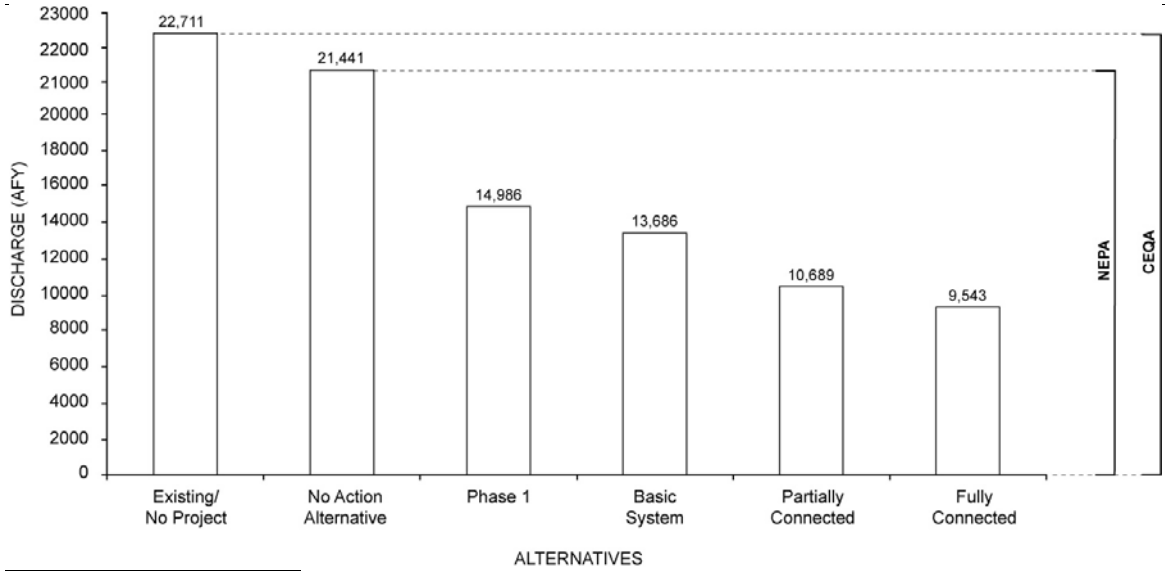
CHART 6-1
SUMMARY OF STREAM CROSSINGS BY ALTERNATIVE



SOURCE: ESA, 2009.

One of the project objectives is to enhance local and regional ecosystems, which can be partially achieved by reducing the treated wastewater discharge to surface water. The Fully Connected System would distribute the most recycled water for beneficial use, resulting in the largest reduction in treated effluent discharge to surface waters compared to the other alternatives. As shown in **Chart 6-2**, the amount of discharge reduction under the Basic System and the Partially

CHART 6-2
SUMMARY OF WASTEWATER DISCHARGE BY ALTERNATIVE



SOURCE: CDM, 2009; ESA, 2009.

Connected System is similar. The Partially Connected System would discharge approximately 20 percent less effluent than the Basic System, while the Fully Connected System would discharge approximately 11 percent less effluent than the Partially Connected System.

The potential for the number of new facilities that could be affected by sea level rise is summarized in **Table 6-5**. The Basic System has the least number of facilities that would potentially be affected. Therefore, although it would provide the least amount of recycled water, the Basic System would have the least amount of infrastructure construction, the least amount of stream crossings, and the least amount of new facilities that could be affected by sea level rise.

TABLE 6-5
COMPARISON OF ALTERNATIVES BASED ON SURFACE HYDROLOGY

	No Project Alternative	No Action Alternative	Phase 1	Basic System	Partially Connected System	Fully Connected System
Stream Crossings	0	32	68	120	200	223
Discharge (AFY)	22,711	21,441	14,986	13,686	10,689	9,543
Number of Facilities Potentially Affected by Sea Level Rise	0	1	3	5	8	8

SOURCE: CDM, 2009; ESA, 2009.

Groundwater

The analysis in **Section 3.3, Groundwater,** determined that proposed facilities would not significantly affect shallow groundwater levels and natural groundwater fluctuations. The Proposed Action would not cause localized increases in groundwater levels over the long-term, therefore the impact on structures or flooding patterns would be less than significant. The use and storage of recycled water would not significantly affect groundwater quality for potable and agricultural uses. Similarly, impervious surfaces constructed under the Proposed Action would not significantly affect groundwater recharge in the action area. There would be no significant and unavoidable impacts on groundwater. Comparison of groundwater pumping reduction, which is generally in proportion to the size and number of facilities under each alternative, illustrates the environmentally superior alternative.

Charts 6-3 and **6-4** demonstrate the amount of potential groundwater pumping reduction for the project alternatives in the Sonoma Valley and Napa MST areas. The impact under CEQA is shown as the difference between the No Project Alternative and the project alternatives and the impact under NEPA is shown as the difference between the No Action Alternative and the project alternatives. **Chart 6-3** shows that the groundwater pumping reduction in the Sonoma Valley area would be the same under all three alternatives except for the No Project and No Action Alternatives. Chart 6-4 focuses on the amount of groundwater pumping reduction in the MST area only, to provide a better basis for comparison among the alternatives. Based on the comparison in Chart 6-4, both the Partially Connected System and the Fully Connected System would provide a substantial offset of potable demand and would have the potential to reduce total groundwater pumping requirements by approximately 52 percent in the Napa MST area (see **Chart 6-3**). The Basic System would provide a 39 percent reduction in groundwater pumping compared to the No Project and No Action Alternatives. Based on these comparisons, as summarized in **Table 6-6**, the Fully Connected System would provide the greatest environmental benefit by offsetting the most groundwater use.

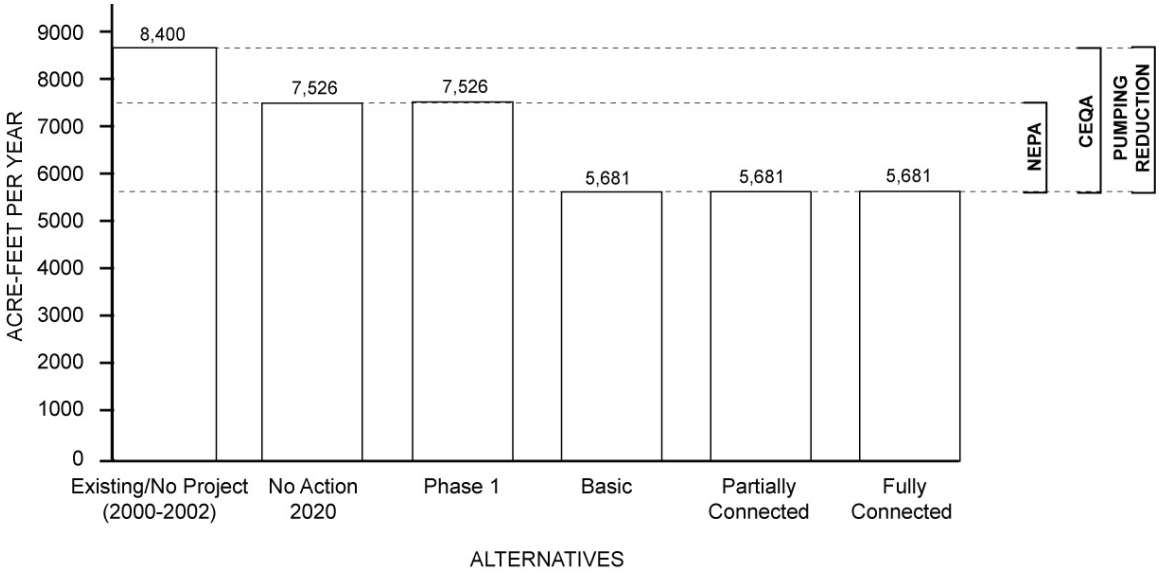
Water Quality

As discussed in **Section 3.4, Water Quality,** the impacts would include short-term construction-related stormwater impacts and long term effects related to recycled water use such as incidental runoff and beneficial impacts such as reduced discharge to surface water and water reuse for habitat restoration. The level of significant short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in fewer impacts.

Biological Resources

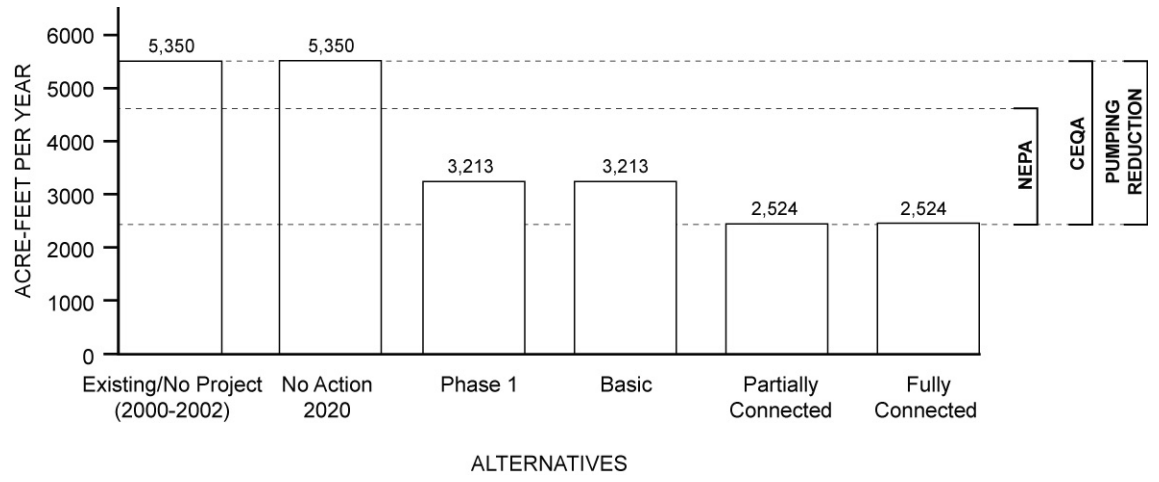
As discussed in **Section 3.5, Biological Resources,** the impacts to biological resource would include short-term construction-related impacts to wetlands, streams, and riparian habitat and special-status species such as California Red-Legged Frog and burrowing owl, fish and invertebrates. Based on this comparison of significant impacts on biological resources, the level of significant short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of disturbance to biological resources.

CHART 6-3
SUMMARY OF POTENTIAL OFFSET IN
SONOMA VALLEY GROUNDWATER PUMPING UNDER EACH ALTERNATIVE



SOURCE: CDM, 2009; ESA, 2009.

CHART 6-4
SUMMARY OF POTENTIAL OFFSET IN
NAPA MST AREA GROUNDWATER PUMPING UNDER EACH ALTERNATIVE



SOURCE: CDM, 2009; ESA, 2009.

TABLE 6-6
COMPARISON OF ALTERNATIVES BASED ON SURFACE HYDROLOGY

	No Project Alternative	No Action Alternative	Phase 1	Basic System	Partially Connected System	Fully Connected System
Total Groundwater Pumping (AFY)						
Sonoma Valley	8,400	7,526	7,526	5,681	5,681	5,681
Napa MST	5,350	5,350	3,213	3,213	2,524	2,524
Percent Reduction						
Sonoma Valley	0	10	10	32	32	32
Napa MST	0	0	39	39	52	52

SOURCE: CDM, 2009; ESA, 2008.

	No Project Alternative	No Action Alternative	Phase 1	Basic System	Partially Connected System	Fully Connected System
Total Groundwater Pumping (AFY)						
Sonoma Valley	8,400	7,526	7,526	5,681	5,681	5,681
Napa MST	5,350	5,350	3,213	3,213	2,524	2,524
Percent Reduction						
Sonoma Valley	0	10	10	32	32	32
Napa MST	0	0	39	39	52	52

SOURCE: CDM, 2009; ESA, 2009.

Land Use

Based on the analysis conducted in **Section 3.6, Land Use,** the Proposed Action would not divide existing communities or conflict with land use plans and policies; the impacts would be less-than-significant. There could be significant construction-related impacts to agricultural resources under all three alternatives, in proportion to the size and number of facilities implemented under each alternative. However, these impacts would be mitigated to a less-than-significant level.

As noted in Section 3.6, the temporary impacts to agricultural land could occur only during the short-term construction period and would be mitigated to a less-than-significant level. This impact assumes a worst case scenario regarding right of way acquisition along pipeline routes. It is anticipated that all pipelines would be constructed within public rights of way, such that this impact would be completely avoided. A comparison between the alternatives shows that the amount of temporarily affected farmland would be similar under both the Partially Connected and Fully Connected Systems, and lower under the Basic System. The impact under CEQA is shown as the difference between the No Project Alternative and the project alternatives and the impact under NEPA is shown as the difference between the No Action Alternative and the project alternatives. **Table 6-7** provides a comparison of alternatives based on affected acres of farmland.

TABLE 6-7
COMPARISON OF ALTERNATIVES BASED ON AFFECTED FARMLAND (acres)

	No Project Alternative	No Action Alternative	Basic System	Partially Connected System	Fully Connected System
Prime Farmland	0	26.5	44.6	69.2	72.2
Farmland of Statewide Importance	0	15.9	85.3	106.1	107.4
Unique Farmland	0	0.0	24.3	31.0	37.0
Farmland of Local Importance	0	52.8	109.3	166.6	175.9
Total Important Farmland	**0**	**95.3**	**263.5**	**372.9**	**392.5**

SOURCE: CDM, 2009; ESA, 2009.

Traffic

As discussed in **Section 3.7, Transportation and Traffic,** the impacts would include short-term construction-related impacts to level of service, circulation patterns, alternative transportation, parking demand, accident potential, and wear and tear on haul routes. The level of significant short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of disturbance to traffic conditions.

Air Quality

As discussed in **Section 3.8, Air Quality,** the impacts would include increase in criteria pollutants, toxic air contaminants, and greenhouse gas emissions. The level of significant short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in fewer impacts.

Noise

As discussed in **Section 3.9, Noise,** the potentially significant, but mitigable impacts would include short-term construction-related noise and vibration. The level of short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of construction related noise. Similarly, the Basic System would have the least amount of recycled water delivery, and therefore, the least amount of pumping related noise.

Hazardous Materials

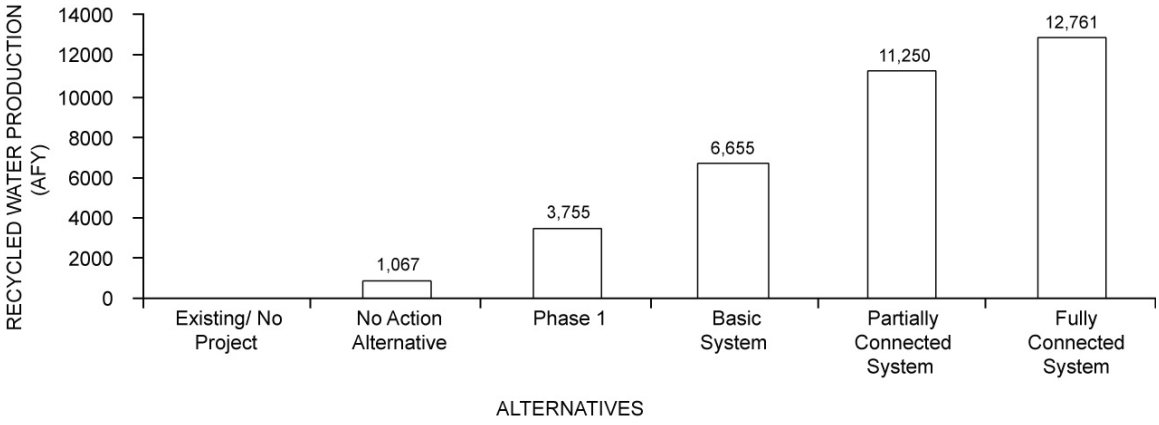
As discussed in **Section 3.10, Hazardous Materials,** the impacts would include the potential for short-term construction-related exposure or accidental release of materials common to construction. Additionally, some facilities would be located within wildland fire hazard areas. The level of significant short-term construction impacts would be similar under the Partially

Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of potential exposure during construction.

Public Services and Utilities

Based on the analysis conducted in **Section 3.11, Public Services and Utilities,** the Proposed Action would create a less-than-significant demand for power. There could be significant impacts to public services under all the alternatives except the No Project Alternative and the impacts would be in proportion to the size and number of facilities implemented under each alternative. **Chart 6-5** differentiates among alternatives based on the increase in recycled water use and offset of potable water supply. Significant temporary and long-term impacts to public services as a result of construction and operational activities, such as increased response times for emergency service providers, need for police and fire assistance during construction, and temporary disruption to utility services, would occur in proportion to the size and number of facilities proposed under each alternative, however the impact would be mitigated to a less-than-significant level. Implementation of the Proposed Action would have a beneficial impact to the offset of potable water supply use.

CHART 6-5
SUMMARY OF PRODUCTION OF RECYCLED WATER FOR BENEFICIAL USE AND OFFSET OF POTABLE WATER DEMAND BY ALTERNATIVE



SOURCE: CDM, 2009; ESA, 2009.

The Fully Connected System would require maximum emergency service assistance during construction, create the most barriers within emergency access routes, and provide the most opportunity for disruption of public services, such as power outages, road closures, and water service interruption. However, based on Chart 6-5, the Fully Connected System would generate the most recycled water to offset potable demand, which would include Russian River water offsets (see **Table 6-8**).

TABLE 6-8
COMPARISON OF ALTERNATIVES BASED ON REUSE AND OFFSET

	Basic System	Partially Connected System	Fully Connected System
Total Recycled Water (AF)	6,655	11,250	12,761
Russian River Demand Offset (AF)*	1,179	2,022	2,148

* Equivalent to recycled water use for urban landscape and irrigation purposes in Marin and Sonoma areas.

SOURCE: CDM, 2009; ESA, 2009.

Cultural Resources

Based on the analysis conducted in **Section 3.12, Cultural Resources,** the Proposed Action would not significantly affect the setting of historic or archaeological resources. There could be significant impacts to unidentified human remains and buried archaeological materials in sensitive areas from construction activities and ground-borne vibration under all the alternatives, except the No Project Alternative and the impacts would occur in proportion to the number and size of the facilities implemented under each alternative. However, the significant impacts would be mitigated to a less-than-significant levels after implementation of the recommended mitigation measures. There would be no significant and unavoidable impacts to cultural or historic resources.

Based on this comparison of significant cultural resource impacts under the different alternatives, the Basic System involves the least amount of facilities, and therefore would result in the least significant impacts. There would be fewer construction sites and less excavation required for the implementation of the Basic System.

Recreation

Based on the analysis conducted in **Section 3.13, Recreation,** there would be a significant temporary impact to recreational facilities under all the alternatives except for the No Project Alternative, in proportion to the number and size of the facilities implemented under each alternative. However, incorporation of the recommended mitigation measures would reduce the impacts to recreational resources to a less-than-significant level. Thus, there would be no significant impacts on recreation.

Based on this comparison of significant impacts on recreational resources, the level of significant short-term construction impacts would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of disturbance to recreational facilities.

Aesthetics

As discussed in **Section 3.14, Aesthetics,** the impacts would include short-term construction-related impacts to scenic vistas, scenic corridors, impacts from new sources of light, and permanent

impacts to visual character. The level of significant short-term construction impacts and long-term effects would be similar under the Partially Connected and Fully Connected Systems, while the Basic System involves the least amount of facilities, and therefore would result in the least amount of construction related visual effects and permanent impacts to scenic vistas.

Socioeconomics

Section 3.16, Socioeconomics, describes the increase in jobs, wages and salaries, and output in the regional economy, as part of the project impacts, which would occur in proportion to the number and size of facilities implemented under each alternative. Construction of the treatment plant upgrades, pipelines, pump stations, and storage reservoirs, would require employment of engineers, construction supervisors, and general construction laborers. These activities would result in economic effects, or increases in jobs, wages and salaries, and economic output in the regional economy. There would be no adverse significant and unavoidable impacts to the regional economy under the individual alternatives.

To differentiate among the three project alternatives, **Chart 6-6** provides for a comparison of regional economic impacts. **Chart 6-6** illustrates the direct and secondary economic benefits that would be experienced under each alternative. The impact under CEQA is shown as the difference between the No Project Alternative and the project alternatives and the impact under NEPA is shown as the difference between the No Action Alternative and the project alternatives. Based on this analysis, the Fully Connected System would result in the greatest amount of economic benefits.

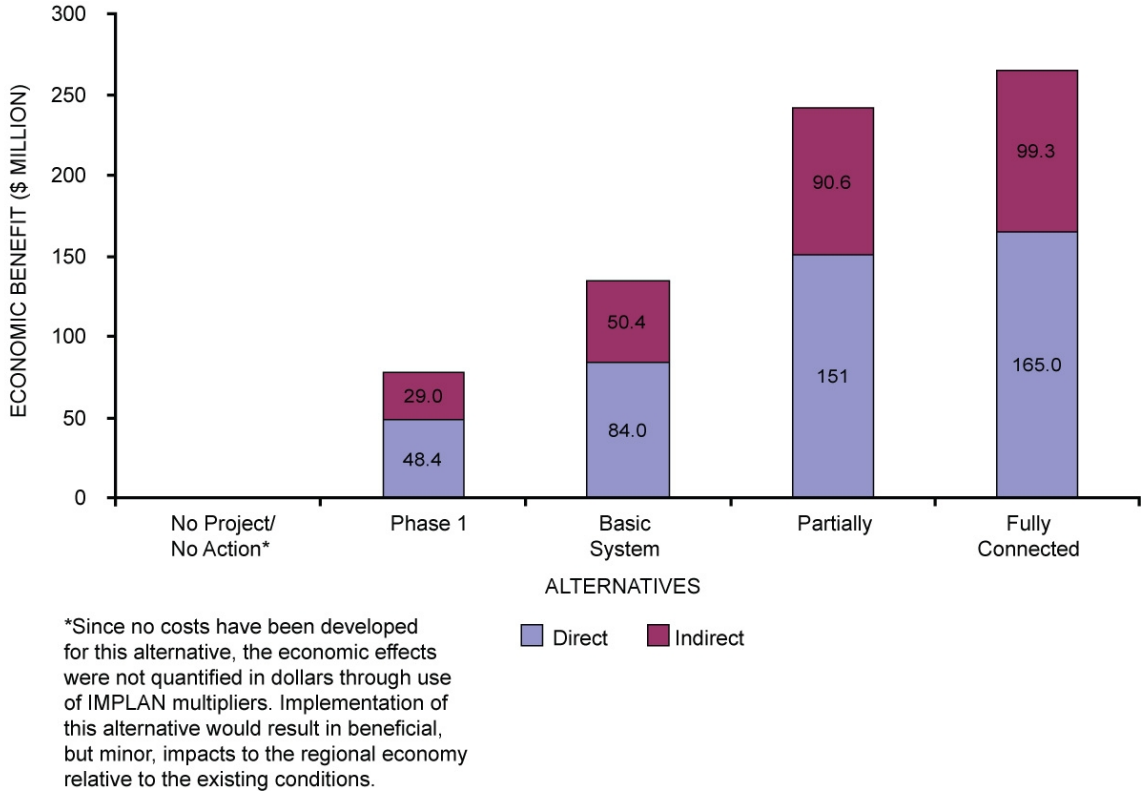
The analysis in Section 3.16, Socioeconomics, also concluded that customer fees would increase as the project costs increase. As a basis of comparison between alternatives, notwithstanding that funding plans have not been formulated for any of the alternatives, the Fully Connected System would have the potential for the greatest adverse impact to disposable incomes because it is the most expensive of all the alternatives.

Based on this comparison of significant adverse socioeconomic impacts under the three alternatives (see **Table 6-9**), the Basic System would involve the least amount of facilities, which would result in the least amount of economic benefit from construction labor requirements, however would have the least overall project costs and result in the least amount of customer fees.

6.4.3 Economic Feasibility

The economic feasibility of the project alternatives was assessed by comparing the costs that would be incurred for implementation of the individual alternatives. The Phase 3 Feasibility Study presented an economic and financial capability analysis to determine the cost-effectiveness of the Proposed Action. The economic and financial capability analysis is prepared according to the U.S. Department of the Interior Bureau of Reclamation (Reclamation) Title XVI Water Reclamation and Reuse Program Feasibility Study Directives and Standards WTR 11-01 (CDM, 2008).

CHART 6-6
SUMMARY OF IMPACTS ON REGIONAL ECONOMY BY ALTERNATIVE



SOURCE: CDM, 2008; ESA, 2009.

TABLE 6-9
COMPARISON OF ALTERNATIVES BASED ON SOCIOECONOMIC IMPACTS

	No Project Alternative	No Action Alternative	Basic System	Partially Connected System	Fully Connected System
Economic Benefit					
Direct (million $)	0	48.4	84.0	151.0	165.0
Indirect (million $)	0	29.0	50.4	90.6	99.3

SOURCE: CDM, 2008; ESA, 2009.

The life cycle costs analysis calculates annual capital costs of implementation of Phase 1 projects over a 50-year period of analysis using a 3 percent real discount rate and adds annual operations and maintenance (O&M) costs (see **Table 6-10**). As shown in Table 6-10, the life cycle cost analysis indicates the lowest costs for the Basic System.

TABLE 6-10
LIFE CYCLE COST ANALYSIS

Life Cycle Costs (dollars $)	Basic System	Partially Connected System	Fully Connected System
	Phase 1	Phase 1	Phase 1
Total Capital Costs	$100,400,000	$101,100,000	$102,300,000
Annual Capital Costs	$3,902,096	$3,929,301	$3,975, 940
Annual O&M Costs	$1,270,000	$1,272,000	$1,277,000
Total Annual Costs	$5,172,096	$5,202,301	$5,252,940
Supply (AF)	3,756	3,756	3,756
$ per acre-foot	$1,377	$1,385	$1,339

6.5 Summary of Comparison of Project Alternatives

The following analysis examines each of the proposed alternatives (i.e., No Project Alternative, No Action Alternative, the Basic System, Partially Connected System, and Fully Connected System) for their ability to meet the stated project objectives (see summary in **Table 6-11)**, their ability to reduce or avoid potential impacts, and their implementation costs. **Table 6-12**, at the end of this section, provides a summary the various trade-offs associated with each Action Alternative.

Comparison of Action Alternatives

Table 6-4 describes the ability of the project alternatives to meet each objective listed above. In general, each of the Proposed Action Alternatives has the ability to meet the stated Project Objectives. The level to which these objectives are met varies with the alternatives. Based upon this rating, all the Action Alternatives are capable of meeting the project objectives, but to varying degrees.

6.5.1 No Project Alternative

Ability to Meet Project Objectives

As noted in Table 6-11, the No Project Alternative fails to achieve any of the project objectives, which are directed at improving water supply reliability, recharging groundwater, offsetting surface water demand, minimizing environmental impacts, achieving financial sustainability, and protecting human health; therefore implementation of an alternative water project is required.

Environmental Effects

Implementation of the No Project Alternative would avoid the construction related impacts and operational impacts identified for the Proposed Action. However, implementation of the No

TABLE 6-11
ABILITY OF PROJECT ALTERNATIVES TO MEET PROJECT OBJECTIVES

	Project Alternatives				
Project Objectives	**Basic System**	**Partially Connected System**	**Fully Connected System**	**No Action Alternative**	**No Project Alternative**
Offset urban and agricultural demands on potable supplies.	**Yes.** Basic System would provide 6,655 acre-feet of recycled water per year for beneficial use. Water recycling alleviates demand on potable supplies by providing an alternate water supply.	**Yes.** Partially Connected System would provide 11,250 acre-feet of recycled water per year for beneficial use. Water recycling alleviates demand on potable supplies by providing an alternate water supply.	**Yes.** Fully Connected System provides the maximum amount of recycled water per year for beneficial use. Development of 12,761 AFY of recycled water would alleviate demand on potable supplies by providing an alternate water supply.	**Yes.** Individual projects reasonably anticipated to occur would provide 1,067 acre-feet of recycled water per year that could offset potable demand, but to a substantially lesser degree than any of the Project Alternatives.	**No**. No projects that could offset potable demand would be implemented.
Enhance local and regional ecosystems.	**Yes.** Provides potable demand offset of 6,455 AFY, reduces discharge to receiving waters, and provides 5,825 AFY to Napa Salt Marsh for habitat enhancement.	**Yes.** Provides potable demand offset of 11,060 AFY, reduces discharge to receiving waters, and provides 2,933 AFY to Napa Salt Marsh for habitat enhancement.	**Yes.** Provides potable demand offset of 12,561 AFY, reduces discharge to receiving waters, and provides 3,085 AFY to Napa Salt Marsh for habitat enhancement.	**Partial**. Provides reduce potential demand offset of 1,067 AFY, reduces discharge to receiving waters, and provides 3,257 AFY for habitat restoration assuming Napa Salt Marsh Pipeline is constructed.	**No.** The Proposed Action establishes an allocation of recycled water to be used for habitat restoration; this would not be implemented under the No Action Alternative.
Improve local and regional water supply reliability.	**Yes.** Provides potable demand offset of 6,655 AFY for local surface and groundwater supplies, as well as imported Russian River supplies.	**Yes.** Provides potable demand offset of 11,250 AFY, for local surface and groundwater supplies, as well as imported Russian River supplies.	**Yes.** Provides potable demand offset of 12,761 AFY, for local surface and groundwater supplies, as well as imported Russian River supplies.	**Partial**. Provides reduce potential demand offset of 1,067 AFY, for local surface and groundwater supplies, as well as imported Russian River supplies.	**No**. No infrastructure would be implemented; there would be no improvement in water supply reliability.
Maintain and protect public health and safety.	**Yes.** All treatment distribution and use of recycled water would be in compliance with Title 22.	**Yes.** All treatment distribution and use of recycled water would be in compliance with Title 22.	**Yes.** All treatment distribution and use of recycled water would be in compliance with Title 22.	**Yes.** All treatment distribution and use of recycled water would be in compliance with Title 22.	**No**. No Proposed Action facilities would be implemented.
Promote sustainable practices.	**Yes.** Provides potable demand offset of 6,655 AFY for local surface and groundwater supplies, as well as imported Russian River supplies. Recycles treated effluent that would be discharged to receiving waters. Provides reliable water supply that has low energy and cost requirements compared to development of new water supply sources.	**Yes.** Provides potable demand offset of 11,279 AFY for local surface and groundwater supplies, as well as imported Russian River supplies. Recycles treated effluent that would be discharged to receiving waters. Provides reliable water supply that has low energy and cost requirements compared to development of new water supply sources.	**Yes.** Provides potable demand offset of 12,761 AFY for local surface and groundwater supplies, as well as imported Russian River supplies. Recycles treated effluent that would be discharged to receiving waters. Provides reliable water supply that has low energy and cost requirements compared to development of new water supply sources.	**No.** Provides potable demand offset of 1,067 AFY for local surface and groundwater supplies, as well as imported Russian River supplies. Recycles treated effluent that would be discharged to receiving waters. Provides reliable water supply that has low energy and cost requirements compared to development of new water supply sources.	**No**. The No Action Alternative does not provide sustainable benefits or promote sustainable practices.

TABLE 6-11 (Continued)
BASIC SYSTEM, PARTIALLY CONNECTED SYSTEM, AND FULLY CONNECTED SYSTEM– ABILITY TO MEET PROJECT OBJECTIVES

	Project Alternatives*				
Objectives	**Basic System**	**Partially Connected System**	**Fully Connected System**	**No Action Alternative**	**No Project Alternative**
Give top priority to local needs for recycled water.	**Yes.** Basic System emphasizes delivery of recycled water within the individual service areas. Recycled water will remain be used to offset potable demand within each the four local service areas.	**Yes.** Interconnectivity between service areas will be expanded to improve the ability to provide recycled water to offset potable demand within each the four service areas.	**Yes.** Fully Connected System represents maximum build- out of recycled water facilities and maximum connectivity between service districts. Recycled water service will be extended throughout the service areas.	**Yes.** Projects reasonably likely to occur under the No Action Alternative are strictly individual projects designed to serve local uses. No benefit of cooperative facilities or funding.	**No**. The No Project Alternative does not support local water needs, and does not establish any priority for recycled water delivery.
Implement recycled water facilities in an economically viable manner.	**Yes.** Over the long-term, development of the water recycling facilities proposed under the Basic System is a cost-effective approach to addressing water supply issues. This alternative represents the lowest cost of the three project alternatives.	**Yes.** Over the long-term, development of the water recycling facilities proposed under the Partially Connected System is a cost-effective approach to addressing water supply issues. This Alternative represents the mid-range cost of the three project alternatives. There is potential for cost-sharing among Member Agencies.	**Yes.** Over the long-term, development of the water recycling facilities proposed under the Fully Connected System is a cost-effective approach to addressing water supply issues. This Alternative represents the highest cost of the three project alternatives, but also allows for the most cost sharing between Member Agencies.	**No.** Individual projects that are reasonably anticipated to occur would be forced to rely on local funding and would not receive federal and state funding.	**No**. No Proposed Action facilities would be implemented.

SOURCE: ESA, 2009.

Project Alternative would not provide the benefits of water reclamation which include recycled water use, potable supply savings, reduced reliance on surface and groundwater, reduced groundwater pumping, and habitat enhancement. Under current conditions, the No Project Alternative would not assist in alleviating current water reliability, either locally or regionally, particularly during peak demand periods. The No Project Alternative would not comply with State goals for water recycling, and would not reduce or assist in management of discharges to San Pablo Bay.

Implementation of the No Project Alternative would amount to a continuation of the current conditions, which would not involve construction-related impacts, like those anticipated under the proposed Action Alternatives. All the other project alternatives would cause environmental impacts, which are discussed above and in **Chapter 3**; the impacts would not occur if the No Project Alternative were implemented. However, the No Project Alternative would fail to improve water quality and groundwater overdraft. Therefore, the No Project Alternative is not considered environmentally superior.

6.5.2 No Action Alternative

Ability to Meet Project Objectives

Implementation of the No Action Alternative would partially meet some the project objectives, as it assumes that a smaller subset of recycled water projects, providing approximately 1,067 afy of recycled water, would be implemented (see Table 6-11). The No Action Alternative would not satisfy any of the project objectives to the degree provided by the three Action Alternatives, and it would not meet the objective of providing regional water supply reliability, as no connections between the WWTPs would occur. The No Action Alternative would also have a subset of the impacts identified in Section 3.0, primarily associated with the construction of the facilities that individual member agencies would be able to implement without the benefit of regional coordination or federal funding.

This alternative would not involve the capital costs associated with the Basic, Partially Connected, and Fully Connected Systems; however it would not be the most economically superior alternative. Financial constraints would limit implementation to local projects (e.g., SVCSD would only implement Alignment 1A) and these projects would be ineligible for federal or state funding.

Environmental Effects

Under the No Action Alternative, projects in the Novato SD and SVCSD service areas would likely occur, and would provide approximately 1,067 AFY of recycled water. Adverse environmental impacts associated with the construction of pipelines and pump stations would occur under the No Action Alternative, however to a lesser degree than the Basic, Partially Connected, and Fully Connected Systems. The impacts would likely be shorter in duration and would affect fewer sensitive receptors than those expected under implementation of the Proposed Action. In general, construction-related emissions and impacts to air quality, and increased

ambient noise would result under the other action alternatives except for the No Project Alternatives. Similarly, the No Action Alternative would potentially affect cultural, surface water, or biological resources in the SVCSD, Novato SD, and Napa SD service areas. The four service areas would experience some level of beneficial socioeconomic impact under the three action alternatives, while there would be no impact under the No Action Alternative.

Although the level of environmental impacts related to construction impacts would be of a smaller scale, the No Action Alternative would not result in the level of potable offset for imported surface water, local surface water and groundwater supplies that would be provided under the Action Alternatives. Similarly, it would not substantially alter the amount of treated effluent discharged to tributaries to North San Pablo Bay. Over time, demand pressures on imported surface water, local surface water, and groundwater supplies would be increased, and current water supply and delivery reliability issues would be exacerbated as growth under the approved General Plans within the NBWRP service area occurs. The No Action Alternative would not take advantage of a local, sustainable, and energy efficient water supply.

Because it would not substantially offset potable demand or reduce groundwater pumping, and would not significantly reduce or assist in management of effluent discharge to San Pablo Bay, the No Action Alternative is not considered environmentally superior.

6.5.3 Alternative 1: Basic System

Ability to Meet Project Objectives

The Basic System would be consistent with the Proposed Action's stated objectives, as discussed in Table 6-11. From an economic standpoint, projected capital costs associated with the Basic System are estimated at $209 million[1], with annual operations and maintenance costs estimated a $1.8 million. This represents the lowest capital cost of the three action alternatives.

Environmental Effects

Based on the comparison of environmental effects in Section 6.3, the Basic System is the environmentally superior alternative in almost all resource areas. As noted in Section 6.3, there would be no significant and unavoidable impacts associated with the Basic System. Chapter 3 recommends measures to mitigate any significant impacts to a less-than-significant level. Effects on natural resources would be in proportion to the size and number of facilities proposed. Most of the adverse environmental impacts would be associated with construction activities; the Basic System requires construction of the least amount of infrastructure, therefore would result in less construction-related impacts. Of all of the action alternatives, the Basic System requires the least amount of storage, making use of existing storage or land available at the WWTPs. Implementing the larger recycled water distribution systems would require additional storage. However, the facilities proposed under the Basic System would have the lowest capacity to treat and distribute

[1] Costs are shown in 2008 dollars. All costs were escalated to April 2008 dollars using the Building Cost Index. (CDM, 2008)

recycled water, and would therefore reduce the least amount of discharge to the tributaries of North San Pablo Bay.

6.5.4 Alternative 2: Partially Connected System

Based on the comparison of environmental effects in Section 6.3, the Partially Connected System is not the environmentally superior alternative in any resource area. In most cases, the impacts for the Partially Connected System would be greater than the impacts under the Basic System, and would be similar to impacts under the Fully Connected System. Although most significant impacts would be mitigated to a less-than-significant level, the Partially Connected System would require more infrastructure than the Basic System, and therefore result in more construction-related impacts.

The Partially Connected System would be consistent with the Proposed Action's stated objectives. It would expand regional interconnectivity, provide a greater amount of recycled water to offset potable demand, and provide greater amount of water for habitat restoration. From an economic perspective, the Partially Connected Alternative is moderately economically viable, as it represents the mid-range cost of the three action alternatives. Projected capital costs associated with the Partially Connected System are estimated at $377.5 million, with annual operations and maintenance costs estimated at $2.8 million.

6.5.5 Alternative 3: Fully Connected System

Based on the comparison of environmental effects in Section 6.3, the Fully Connected System is the environmentally superior alternative in several impact areas. The Fully Connected System would reduce the maximum amount of discharge to the Bay, offset the maximum amount of groundwater pumping, and provide the maximum amount of recycled water use. Although, most of these benefits are related to water supply and water quality, the Fully Connected System could result in adverse impacts to existing drainage patterns and stormwater flow, as well as temporary construction-related impacts to water quality.

The Fully Connected System would be consistent with the project objectives. By providing maximum recycled water, the Fully Connected Alternative would be capable of significantly offsetting potable demand and increasing water supply reliability, expanding regional interconnectivity, and supporting habitat restoration. From an economic perspective, the Fully Connected System would be beneficial to the regional economy, as discussed above. However, projected capital costs associated with the Fully Connected System are estimated at $414 million, with annual operations and maintenance costs estimated at $3.1 million. This represents the highest cost alternative, which is not the most economically viable alternative.

The tradeoffs associated with implementing one alternative over another are summarized below in **Table 6-12**.

TABLE 6-12
TRADEOFFS ASSOCIATED WITH EACH ALTERNATIVE

Alternative	Benefits	Disadvantages
No Project Alternative	No cost to individual Member Agencies	No additional recycled water for potable offset or habitat enhancement
	No adverse environmental impacts as a result of project construction and operation	No reduction of discharge to San Pablo Bay
		No regional interconnectivity or improvement of regional water supply reliability.
No Action Alternative	Lower costs than Proposed Alternatives	Minimum amount of recycled water for beneficial reuse and habitat enchantment
		Projects would be implemented without federal funding
		No regional interconnectivity
		Minimal improvement of local water supply reliability
Basic System	Lowest cost of Action Alternatives Lowest adverse environmental impacts	Minimum amount of recycled water for potable offset.
Partially Connected System	Medium costs, recycled water reuse, environmental impacts	Greater costs than Basic System
		Greater impacts from construction
Fully Connected System	Maximum amount of wastewater discharge reduction Maximum amount of recycled water for beneficial reuse and habitat enhancement	Maximum costs; Maximum impacts from construction

SOURCE: ESA, 2008.

6.6 Alternatives to the Project

A number of potential alternatives to the project were considered by NBWRA, however were not carried forward and not evaluated at level equal to the Action Alternatives in this EIR/EIS due to factors such as lack of feasibility; lack of environmental advantages; and/or inability to meet the basic objectives of the project.

6.6.1 Importation of Water

Under this alternative, potable or treated recycled water would be imported to Sonoma, Napa, or Marin counties from another community not participating in the NBWRA, such as Windsor, Yountville, Petaluma, Rohnert Park, Vallejo or Santa Rosa. For recycled water importation, a pipeline would be constructed from a sanitation district of another community to the users in Sonoma, Napa, or Marin, with booster pump stations to maintain sufficient water pressure.

Even if water were imported from the nearest community, this alternative would require construction of a large conveyance pipeline network to serve the LGVSD, Novato SD, SVCSD,

and Napa SD service areas. This alternative would require installation of a minimum of 50 miles of pipeline through a combination of roadways and undeveloped areas (ESA, 2006). This alternative was analyzed for the three criteria that were used to assess the alternatives of the project above.

For potable water importation into the region, expansion of the Department of Water Resources (DWR) North Bay Aqueduct (NBA), the capacity of which is fully allocated, would be necessary. This would also entail identification and acquisition of additional State Water Project (SWP) entitlements to serve additional supplies to the MST area, or other NBWRA service areas. For cost comparison, the Phase 3 Feasibility Study (CDM, 2008) included expansion of the NBA to provide 1,937 AFY of imported water to Napa MST area. Facility expansion would require a series of new pipeline alignments and booster pump station from Barker Slough. The cost of this type of system is estimated at $40 million, plus an additional $8 million in legal fee and bonding fees. Additional local cost beyond NBA expansion costs would include a new potable distribution system to the MST Area, and long-term water supply costs. Importation of SWP supplies to the MST area are estimated at approximately $96 million (CDM, 2008).

Ability to Meet Project Objectives

Table 6-13 summarizes the ability of Imported Water Alternatives, both recycled and potable supplies, to meet the stated project objectives. Importation of recycled water into the NBWRP service area would have the potential to meet some of the objectives, in that it would provide a recycled water supply to offset the use of potable supplies for irrigation. However, it is not anticipated that these alternatives would provide a more sustainable or cost effective water supply, given the pipeline distances involved.

Fundamentally, these alternatives would not offset potable supplies currently used for irrigation. Rather, they would continue to use imported potable supplies to meet irrigation demands. These alternatives would not reduce the amount of treated effluent discharge to tributaries of North San Pablo Bay, and would not provide a reliable habitat enhancement water supply for the Napa Salt Ponds. Additional importation of potable supplies would not improve the reliability to local water supplies, as SWP supplies are subject to drought year reliability.

Significant Effects

Importation of recycled water from an outside community would incur similar impacts as the alternatives of the project discussed above. Impacts associated with pipeline construction would include short-term impacts to aesthetics, air quality, biological resources, hazards and hazardous materials, water quality, land use, noise, public services and utilities, and traffic. Pipeline construction could also result in temporary and permanent disturbance to jurisdictional wetlands and other waters, riparian habitat, special-status plant and animal species, and known or unknown cultural resources.

This alternative would cause lesser impacts to surface hydrology and reduce groundwater pumping; however, these effects would occur outside the action area and would not address

TABLE 6-13
ABILITY OF ACTION ALTERNATIVES TO MEET PROJECT OBJECTIVES

	Alternatives of the Project			Alternatives to the Project		
				Importation of Water		Desalination
Objectives	Basic System	Partially Connected System	Fully Connected System	Importation of Recycled Water	Importation of Potable Water (SWP via the NBA)	MMWD or SVCSD Plant
Offset urban and agricultural demands on potable supplies.	**Yes**	**Yes**	**Yes**	**Yes.** If new infrastructure is established to convey recycled water from the outside community's treatment facility, importation and use of recycled water would offset potable water use in the action area.	**No**. If potable water (i.e. SWP water) is imported from an outside community, potable demand and impacts to surface water would be shifted to a different location, but would fail to offset potable demand.	**Yes**. Desalination of sea water would offset potable demand by processing seawater.
Enhance local and regional ecosystems.	**Yes**	**Yes**	**Yes**	**Yes**. Although this alternative does not directly incorporate habitat restoration, it could result in reduced groundwater pumping, improve the groundwater overdraft situation, and contribute to improved stream flow hydrology and riparian habitat. However, this alternative would not reduce wastewater discharge produced in the action area.	**Yes**. Although this alternative does not directly incorporate habitat restoration, it could result in reduced groundwater pumping, improve the groundwater overdraft situation, and contribute to improved stream flow hydrology and riparian habitat. However, this alternative would not reduce discharge produced in the action area.	**No.** Brine effluent/ discharge could affect aquatic ecosystems. This alternative does not allocate water for habitat restoration.
Improve local and regional water supply reliability.	**Yes**	**Yes**	**Yes**	**No.** Importation of recycled water would connect an outside community to part of the action area, but would not effectively improve interconnectivity within the action area. It could improve water supply reliability within portions of the action area, but the effect on outside water supply reliability is unclear.	**No**. Increased reliance on potable water would not improve overall water supply reliability.	**Yes**. This alternative emphasizes local water supply. Seawater is an accessible and available water supply source.
Maintain and protect public health and safety.	**Yes**	**Yes**	**Yes**	**Yes.** Elements of the alternative would not compromise human health.	**Yes**. Elements of this alternative would not compromise public health.	**Yes**. Elements of this alternative would not compromise public health.
Promote sustainable practices.	**Yes**	**Yes**	**Yes**	**No.** Although this alternative promotes reuse of water, it would potentially incur greater construction-related impacts.	**No**. Importation of potable water from an outside community would not holistically address water supply issues. It would require extensive construction, incur construction-related impacts, and have high capital costs.	**Yes**. Desalination is would use seawater as source, and the impacts would most likely be mitigated to a less-than-significant level. However, it may not improve long-term sustainability of the regional water system or enhance sensitive ecosystems, from a water supply, groundwater management, or habitat restoration perspective.

TABLE 6-13 (Continued)
SUMMARY OF THE BASIC, PARTIALLY CONNECTED, AND FULLY CONNECTED SYSTEMS COMPARED TO IMPORTATION OF WATER AND DESALINATION– ABILITY TO MEET PROJECT OBJECTIVES

	Alternatives of the Project			Alternatives to the Project		
				Importation of Water		Desalination
Objectives	**Basic System**	**Partially Connected System**	**Fully Connected System**	**Importation of Recycled Water**	**Importation of Potable Water (SWP via the NBA)**	**MMWD or SVCSD Plant**
Give top priority to local needs for recycled water.	**Yes**	**Yes**	**Yes**	**No.** Importation of recycled water from an outside community to the study area would not emphasize local water delivery.	**No**. Importation of potable water would exacerbate potable demand in the exporting community.	**Yes**. A desalination facility would provide water to the local water districts.
Implement recycled water facilities in an economically viable manner.	**Yes**	**Yes**	**Yes**	**Yes/ No.** This would be a cost-effective alternative. However, the potential for cost-sharing among agencies is reduced.	**No**. The capital costs to construct a distribution system would be equivalent to the cost to import recycled water. But, importation of potable water would be delivered via the NBA, the capacity of which is fully allocated; therefore importation of potable water would require expansion of the NBA, which makes costs prohibitive. Furthermore, the potential for cost-sharing among agencies would be reduced.	**Yes/ No**. The MMWD Plant, for example, would be cost-effective. However, the potential for cost-sharing among agencies is prohibited.

groundwater pumping issues within the action area in Sonoma, Napa, or Marin Counties. Similarly, importing recycled water would not reduce wastewater discharge within the action area, since recycled water sources would lie outside the action area.

Importation of potable water would require additional infrastructure, which would result in construction-related environmental impacts and a potential increase in potable demand outside the action area. Importing potable water would not reduce wastewater discharge within the action area.

Economic Feasibility

Under this alternative, the Member Agencies would face the institutional constraints of developing an agreement to obtain either recycled water or potable water supplies, prepare the cost estimates associated with purchase of the water, the costs of constructing new distribution infrastructure. Importing water from outside communities to individual service areas could require pipelines in excess of what would be required to develop connections between the four Member Agencies. For example, if water were imported to SVCSD from a community located at greater distances from Napa, such as Santa Rosa or Windsor, approximately 55 to 65 miles of pipeline would need to be constructed. It would require approximately 20 to 30 miles of pipeline to connect SVCSD to the LGVSD WWTP, Novato SD WWTP, or the Napa SD WWTP. For cost comparison, the Phase 3 Feasibility Study (CDM, 2008) included expansion of the NBA to provide 1,937 AFY of imported water to Napa MST area. **Table 6-14** provides a summary comparison of the NBWRA Phase I versus alternatives reviewed, but not considered further. Facility expansion would require a series of new pipeline alignments and booster pump station from Barker Slough. The cost of this type of system is estimated at $40 million, plus an additional $8 million in legal fee and bonding fees. Additional local cost beyond NBA expansion costs would include a new potable distribution system to the MST Area, and long-term water supply costs. Importation of SWP supplies to the MST area are estimated at approximately $96 million (CDM, 2008). Expansion of the NBA for this cost would only meet the needs of one of the NBWRP service areas.

TABLE 6-14
COMPARISON OF CAPITAL COSTS AND COST-EFFECTIVENESS FOR ALTERNATIVES TO THE PROPOSED ACTION

	NBWRA Alternative 1 Phase 1	Water Project (Sonoma and Marin Counties Portion of Action Area)	Import Water to MST Area (Napa County portion of Action Area)	Desalination (MMWD)
Annual Capital Costs ($)	4,702,725	6,781,232	3,719,428	121,100,000
Annual O&M Costs ($)	1,381,000	N/A	N/A	7,100,000*
Total Annual Costs ($)	6,083,725	6,781,232	3,719,428	
Supply (AF)	4,654	3,613	1,937	5,300
Dollar per acre-foot	1,307	1,877	1,920	24,169.80

SOURCE: CDM, 2008; ESA, 2009

6.6.2 Desalination

Desalination of saline water from San Pablo Bay would provide a reliable supply of water for irrigation. Currently, reverse osmosis (RO) treatment is the most cost-effective and feasible treatment option for desalination. The desalination plant could be sized and operated to provide a continuous source of supply. Due to the higher salinity of the source water and depending upon the efficacy of the RO process, the high salinity (~35,000 milligrams per liter of total dissolved solids), a flow of 5,500 AF of source water would produce approximately 2,750 AF of desalinated water.[2] As such, higher feed pressure and need to increase the treatment capacity would result in a high electric power requirement.

Desalination has been previously proposed for both Marin and Sonoma counties. The Marin Municipal Water District has developed a desalination project that would serve the City of San Rafael and Marin County. Construction of a 5-mgd desalination plant is proposed, and capacity could be expanded in 5 mgd increments, up to a maximum capacity of 15 mgd. The source water from San Rafael Bay would undergo several treatment processes at the facility including solid removal, reverse osmosis, and disinfection and addition of materials for taste. The potable product water generated at the facility would be 50 percent of the source water flowing into the facility. The brine produced in the reverse osmosis process would be blended with treated wastewater prior to discharge into the Bay. The solids would be disposed in the Redwood Landfill.

In Sonoma County, the desalination alternative would provide desalination of seawater to provide water supply for irrigation. The desalinated water would require blending with either recycled water or groundwater at the SVCSD WWTP prior to irrigation use. One option would be to size the plant to supply 2,750 AFY to the Sonoma Valley during irrigation months. Another option is a regional desalination plant that would provide irrigation as well as augmenting drinking water supplies for both the City of Sonoma and unincorporated areas of Sonoma County. The project would consist of an RO plant, an onshore pumping station and chemical treatment unit, a seawater intake structure, an onshore/offshore seawater supply pipeline between the onshore pump station and offshore seawater intake, pipelines to transport seawater and chemicals between the desalination plant and onshore pump station/chemical treatment area, and a pipeline to transport concentrated seawater brine from the desalination plant site to an ocean outfall. A desalination project could also require construction of a power substation (ESA, 2006).

Ability to Meet Project Objectives

Table 6-13 presents a summary of project alternative's consistency with stated project objectives and an analysis of alternatives of the project consistency with the objectives to support the decision to reject these alternatives. As noted above, some alternatives to the project would, in fact, be cost-effective; however, these alternatives do not achieve a majority of the project objectives. The desalination alternative (MMWD proposed plant) is more cost-effective than the three action alternatives, but does not satisfy stated project objectives (Table 6-11).

[2] Assuming 50 percent efficacy, the RO process would generate 50 percent desalinated water of the source water.

Environmental Effects

The environmental impacts associated with the desalination alternative would occur during construction of the project facilities similar to other alternatives. Construction activities would include construction of the RO plant, pipeline, and rebuilding the pier. Environmental impacts to aesthetics, ambient noise, and water quality are typically associated with desalination facilities.

Long-term effects would include water quality impacts from the discharge of the brine generated by the desalination process. The discharge would be dispersed by currents in San Pablo Bay, affecting temperature, nutrients, and turbidity and, therefore, the abundance and diversity of marine organisms. Areas of potential concern in relation to oceanography and marine water quality include temperature, dissolved oxygen, or salinity; possible localized changes in currents or in turbidity, due to the presence of intake pipes on the ocean bottom or due to the pumping/discharge of effluents from the desalination plant; and possible changes in dispersion of sewage plume effluent due to added discharge of brine effluent from the desalination plant. As such, a desalination project would require a baseline study to establish offshore conditions prior to desalination plant startup; and perform quarterly marine water quality/biological monitoring in accordance with the San Francisco Bay Regional Water Quality Control Board requirements during operational phase (ESA, 2006). Implementation of a desalination plant would also require construction of new facilities, which would incur construction-related impacts similar to those anticipated under the Proposed Action; therefore the desalination alternative would have a similar level of temporary environmental impact when compared to the three action alternatives.

Economic Feasibility

The capital costs and operations and maintenance costs could be prohibitive: the estimated capital cost of the MMWD plant is estimated at $121.1 million, with annual operations and maintenance costs as high as $7.1 million (Table 6-14). When compared to the proposed Basic System, a desalination plant would be more cost-effective[3], but the project may be ineligible for federal funding. Further, there are high energy costs associated with this alternative in addition to the costs for land acquisition, construction of seawater intake and potentially a brine water discharge line and brine water outfall. In addition, considering the extremely high cost for desalination, coupled with its greater dependency on large quantities of power, this alternative was not carried forward for further analysis.

6.6.3 Variations of Proposed Action Alternatives

During the scoping process for the NBWRP, members of the public requested that additional alternatives be developed and reviewed that addressed two central themes: 1) Prioritization of recycled water to offset urban demands that are served by Russian River supplies, and; 2) prioritization of recycled water to meet local demands first, thereby minimizing the carbon footprint of the selected alternative.

[3] Cost-effectiveness is based on the cost per AFY, calculated using estimated total AFY and costs.

The NBWRA recognizes that an infinite number of facility configurations are available within the region, and has formulated this analysis to most cost effectively serve identified users within the region. In effort to address this request, a "landscape only" alternative was reviewed. This alternative would include the following elements:

- Complete buildout of the NMWD Urban Recycled Water Plan, including all of the facilities envisioned under the Fully Connected Alternative, in Phase 1;
- Implementation of all LGVSD Projects in Phase 1;
- Reduction of Napa SD supplies for agricultural irrigation; and
- Reduction of supplies to SCVSD for agricultural irrigation.

A landscape-only alternative would provide approximately 3,920 afy of recycled water, and would require construction of 73 miles of pipeline, 4.0 mgd of tertiary treatment capacity, 6 acre-feet of storage, and 1,614 horsepower of pumping. The amount of pipeline is greater than Phase 1 by approximately 14 miles, due to the greater geographic distribution of end users.

Ability to Meet Project Objectives

A landscape-only alternative would not meet the stated project objective to offset urban and agricultural demands on potable supplies, as all recycled water would be prioritized to urban uses, and no recycled water would be made available to meet agricultural demands. Offset of groundwater pumped for agricultural uses would not occur, which is only of the clearly identified local needs for recycled water. A landscape-only alternative would focus funding to recycled water facilities in Marin, creating an equity issue among the NBWRA Member Agencies, and reducing the regional nature of the NBWRP.

Environmental Effects

The environmental effects of a landscape-only alternative would generally be similar to those associated with the Action Alternatives. Implementation of Phase 1 targeting this end user group would increase the miles of pipeline construction by approximately 14 miles, which would increase the scale and geographic distribution of impacts identified for Phase 1. This alternative would not avoid any impacts associated with the proposed Action Alternatives.

Economic Feasibility

Projected capital costs associated with a landscape-only variation are estimated at $108.4 million, making it comparable to Phase 1 of the Basic System. However, at the local level, this would shift a disproportionate application of funds to the NMWD/Novato SD and LGVSD projects, essentially building out 100% of those agency's recycled water programs as part of Phase 1. This would be an equity issue for NBWRP, but would also place a substantial financial burden on NMWD, Novato SD, and LGVSD to provide matching local funds in order to build out their local recycled water programs.

Because this alternative would not meet one of the stated project objectives, and would not be economically feasible due to the over-prioritization projects within certain Member Agencies, consideration of this alternative was not carried forward for further analysis.

6.7 Environmentally Superior Project Alternative

The lead agency is not required by CEQA or NEPA to adopt an environmentally superior alternative that will not feasibly attain project objectives or reduce environmental effects. In the process of selecting the environmentally superior alternative, NBWRA has evaluated several factors, including environmental effects, engineering and operational criteria, system reliability and flexibility, cost, and efficient coordination with other water recycling efforts, in determining which alternative is the best project to approve and implement.

CEQA and NEPA require that a lead agency demonstrate why a project or an alternative is selected. This is provided in the findings document that is adopted by the Board of Supervisors. The CEQA Guidelines indicate that when the No Project Alternative is the environmentally superior alternative, the EIR should identify an environmentally superior alternative from among the Proposed Action and other "action" alternatives. In this case, based on the discussion above the No Project Alternative is not the environmentally superior alternative. The No Action Alternative would cause the least amount of environmental impact, incrementally, due to its reduced facility requirements. The Basic, Partially Connected, and Fully Connected Systems may offer some advantage by increasing connectivity between the service areas.

The Basic System has been identified as the most environmentally, equitably, and financially sustainable alternative that will effectively fulfill the project objectives. The Basic System would provide adequate conveyance, pumping, and storage capacity that would result in 6,655 AFY of recycled water, therefore offsetting a substantial amount of potable demand and reducing wastewater discharge to San Pablo Bay. The Basic System would achieve the project objectives with least environmental impacts and costs, although would not provide the benefits from increased connectivity that would occur under the Partially and Fully Connected Systems. The Basic System would have the capacity to provide recycled water to offset potable demand and improve water supply reliability, although to a lesser degree than the Partially Connected and Fully Connected Alternatives. The Basic System appears to best meet the stated objectives of the project, for the following reasons:

1) The Basic System provides offset for urban and agricultural demands on potable supplies, although not to the degree provided by the Partially Connected and Fully Connected Systems.

2) The Basic System includes the greatest provision of recycled water to Napa Salt Ponds, as well as secondary benefit to local surface and groundwater supplies;

3) The Basic System would improve local and regional water supply reliability, although not to the degree provided by the Partially Connected and Fully Connected Alternatives.

4) The Basic System would maintain and protect public health and safety, as would all of the alternatives. The No Project Alternative was actually rated highest, as it would not construct or operate any proposed facilities.

5) The Basic System would promote sustainable practices by providing recycled water, although not to the degree provided by the Partially Connected and Fully Connected Alternatives.

6) The Basic System is the most local of the alternatives, as no connections between WWTPs would be provided, with the exception of provision of recycled water to the Napa Salt Ponds. Therefore, the ability to "export" water from one service area to another is limited.

7) The Basic System is the least expensive of the alternatives considered, with the exception of the No Action and No Project Alternatives.

The Basic System would provide some connectivity between service areas with a major emphasis on local water use. Water reuse would provide environmental benefits by offsetting surface and groundwater use, reducing the need to develop additional water supplies, and reducing discharge to the Bay. Although an incrementally smaller amount of recycled water would be available, it would represent an economically feasible alternative. Implementing the Basic System would cost 80 percent less than the Partially Connected System, and 200 percent less than the Fully Connected System (CDM, 2008). Since the Basic System would represent the lower cost alternative and would be implemented through federal and state funding options, it is the most cost-effective for the Member Agencies. The Basic System would require the least amount of new storage and relies on the use of existing facilities by rehabilitating reservoirs and using ponds at the WWTPs.

Compared to the Basic System, the Partially and Fully Connected Systems would increase regional connectivity and provide incrementally more recycled water treatment and distribution facilities, albeit with greater costs for greater costs for the Member Agencies, construction impacts, and greater potential for conflict with natural resources. Therefore, the Partially and Fully Connected Systems are not the most environmentally superior alternatives (see Table 6-13).

In general, all the three proposed alternatives would meet the stated project objectives and comply with applicable regulations and policies. In relation to the stated project objectives and environmental impacts, the Fully Connected System would involve the greatest capital costs and maximum adverse environmental impacts due to the proportion of facilities that would be required. The benefit of reducing the amount of wastewater discharged to the Bay is counterbalanced by the detriment cause during construction and facility operation; therefore, the Fully Connected System is not considered environmentally superior.

In general, the Partially Connected System represents the middle ground between the Basic System and the Fully Connected System, balancing the potential environmental impacts, implementation costs, and risk issues associated with the alternatives. In comparison, the Partially Connected System would cause greater environmental impacts than the Basic System, and would cause impacts similar to the Fully Connected System. The Partially Connected System could fulfill the objectives to improve water supply reliability and offset potable demand to a higher

degree than the Basic System, however the Partially Connected System would not necessarily be the most financially or environmentally sustainable option, due to increased infrastructure requirements.

Based on the criteria set previously in the chapter for alternatives analysis, with respect to their ability to meet the stated project objectives, their potential environmental impacts, and the cost of implementation, it was determined that the Basic System is identified as the environmentally superior alternative. Of the action alternatives, the Basic System would achieve the project objectives, result in lesser environmental impacts, and would incur lower costs. The Basic System would thus achieve all of the project objectives while simultaneously providing a means for Member Agencies to achieve water management goals, meet future water demand, augment surface water use, and sustain environmental and water quality.

References – Alternatives Analysis

Camp Dresser McKee, Inc. (CDM), *Phase 3 Engineering and Economic/ Financial Analysis Report*, June 2008.

Camp Dresser & McKee, Inc. (CDM), Data related to Recycled Water Use and Acreage Served and Wastewater Discharge under the Project Alternatives, 2009.

Environmental Science Associates, *Sonoma Valley Recycled Water Project, Environmental Impact Report*, 2006.

CHAPTER 7
Climate Change

7.1 Introduction

Climate change is a shift in the average weather patterns observed on earth, which can be measured by such variables as temperature, wind patterns, storms, and precipitation (SCWA, 2008). This chapter presents a discussion of climate change and its potential consequences and how it would affect or be affected by the proposed project.

The earth's atmosphere includes gases such as carbon dioxide and methane that trap solar radiation entering the earth's atmosphere. As a result, the heat and the radiation that otherwise would have escaped back into space is retained, resulting in warming of the earth's atmosphere. This phenomenon is known as the greenhouse effect (refer to **Section 3.8, Air Quality,** for details). The gases that trap the heat and radiation are called greenhouse gases (GHGs).

Scientific research to date indicates that observed climate change is most likely a result of increased emission of GHGs associated with human activity (Intergovernmental Panel in Climate Change, 2007a; 2007b). Among the prominent GHGs contributing to the greenhouse effect are water vapor, methane, ozone, nitrous oxide, carbon dioxide (CO_2), and chlorofluorocarbons. GHG emissions in excess of natural ambient concentrations are responsible for enhancing the greenhouse effect. Emissions of the GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential and agricultural sectors (California Energy Commission, 2006). In California, the transportation sector is the largest emitter of GHGs (accounting for 40.7 percent of the total GHG emissions in the state in 2004), followed by electricity generation (California Energy Commission, 2006). If California were a country, it would rank between the 12th and 16th largest emitters of CO_2 in the world. California produced 492 million gross metric tons of CO_2 equivalents[1] in 2004 (California Energy Commission, 2006).

One of the actions taken to address climate change and GHG emissions in California is the 2005 Executive Order S-3-05. This order mandates GHG emission reduction targets as follows:

- by 2010, GHG emissions reductions to 2000 levels;

[1] Carbon dioxide equivalent (CO_2E) is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, methane is a much more potent GHG than CO_2.

- by 2020, GHG emissions reductions to 1990 levels; and
- by 2050, GHG emissions reductions to 80 percent below 1990 levels.

In 2006, the California Global Warming Solutions Act of 2006 was passed (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires the California Air Resources Board to design and implement emission limits, regulations, and other feasible and cost-effective measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing an approximate 25 percent reduction in emissions).

Two general areas relevant to the discussion of potential environmental effects related to climate change are:

- Would the proposed project contribute to the adverse effects of climate change (e.g., GHG emissions)?
- Would the proposed project be adversely affected by the environmental changes projected to result from climate change (e.g., sea level rise)? What would the role of the project be as it relates to the effect of climate change on water resources?

The first question, regarding the project's contribution to climate change, relates to GHG emissions and is analyzed in **Section 3.8, Air Quality,** of this Environmental Impact Report / Environmental Impact Statement (EIR/EIS). As discussed in the section, the proposed project would result in less-than-significant long term GHG emissions. Refer to Section 3.8, Air Quality, for details.

The second question, whether the proposed project would be affected adversely by the projected environmental changes associated with climate change, centers on issues such as water resources and sea level rise, which is discussed in this chapter. Sea level rise is also discussed in Section 3.2, Surface Hydrology.

7.2 Potential Changes and Effects from Climate Change

The many effects of GHG emissions are still being researched and are not fully known, but are expected to include increased temperatures, which could reduce snowpack, which in most areas is a primary source of fresh water[2]. Climate change is expected to exacerbate air quality problems and adversely affect human health by increasing heat stress and related deaths; increase the incidence of infectious diseases, asthma and respiratory health problems; cause sea level rise threatening urban and natural coastal areas; cause variations in natural plant communities affecting wildlife; and cause variations in crop quality and yields (SCWA, 2008). Climate change is also expected to result in more extreme weather events and heavier precipitation events that can lead to flooding as well as more extended drought periods.

[2] Snowpack provides limited water to NBWRP services areas, and no water to MST or Carneros areas in Napa. While the City of Napa does receive water from the State Water Project, the City does not serve unincorporated areas of Napa County.

7.2.1 Water Resources

Water supply can be described in terms of indices such as precipitation, snow pack, and runoff. Analysis of data and weather records are studied to determine the trend and the variability in the indices (e.g., precipitation and runoff), which affect water availability.

Most precipitation events in California occur between October and April more specifically, in terms of amount of precipitation occurring from November through March. An analysis by the United States National Weather Service (USNWS) using data from 1931 through 2005 indicates a long-term trend of increasing annual precipitation (i.e., increase of up to 1.5 inches per decade) in California, especially in northern California (USNWS, 2008). A second investigation completed by the California Department of Water Resources (DWR) indicated a statistically significant increasing trend in total precipitation in northern and central California since the late 1960s (DWR, 2006). An investigation by Bardini and others (2001) showed a trend of potentially decreasing annual precipitation in California; however, this result is probably related to the specific subset of data that the Bardini study relied upon, wherein extremes at the beginning or end of time series data can substantially impact the identified trend (DWR, 2006). Rainfall data from November through March of 1930 through 1997 indicated significant increases in California rainfall (Mote, 2005).

There is also evidence that the amount of precipitation that occurs on an annual basis is becoming more variable (i.e., periods of both high and low rainfall are becoming more common). Specifically, a study performed by DWR (2006) indicates that present day variability in annual precipitation is about 75 percent greater than that of the early 20th century.

As stated above, precipitation across California appears to have increased over the past century, and individual water years have become more variable in terms of the amount of precipitation that occurs. It follows, therefore, that similar trends would be observed for runoff. Annual runoff (i.e., runoff measured from October 1st through September 30th) and peak runoff (i.e., typically measured for individual storm events) include flows derived from precipitation events, snowmelt, and river base flow. However, most of the water mass present during a peak runoff event is typically derived from concurrent precipitation and/or snowmelt.

A DWR study by DWR (2006) compares pre- and post-1955 annual average water year unimpaired runoff[3] for 24 watersheds across northern, central, and southern California. The study indicates an annual increase in runoff of up to 27 percent for 21 of the 24 watersheds, with an overall average increase of 9 percent. However for summer months the runoff from April to July is decreasing. In May 2008, seasonal runoff of Napa River in the San Francisco Bay Region totaled 45,000 acre-feet which is 60 percent of average runoff for this period. In 2007, the runoff for the same period was 30 percent of average (DWR, 2006).

[3] Unimpaired runoff refers to the runoff that occurs within a river above major regulating impoundments such as major dams.

7.2.2 Flooding and Sea Level Rise

As discussed above, it is anticipated that climate change will have a substantial effect on the timing and magnitude of snowfall, rainfall, and snowmelt events in California. Large annual variations in winter rainfall and runoff, which are normal in California, create uncertainty surrounding potential increase in flooding as a result of climate change.

According to a report by DWR (2006), the mean sea level at the Golden Gate Bridge has risen by at least 8 inches since 1900. This is in line with a report by the IPCC (2007a), which indicates average increases of 3.9 to 7.9 inches globally during the last century. The observed sea level rise likely results from a combination of factors, including melting of polar and terrestrial ice and snow, and thermal expansion of ocean water as the earth's temperature increased (IPCC, 2007b).

Efforts have been made to predict the amount of sea level rise that would likely occur in the future under various worldwide GHG emissions scenarios. Results from a recent IPCC report indicated that global sea level could increase by an estimated 7 to 23 inches by 2099, or about 0.6 to 3.8 inches per 10 years (IPCC, 2007b). There is some disagreement and uncertainty in regards to sea level rise projections (Munk, 2002); however, the IPCC (2007b) study represents what is probably the most highly regarded and accepted study.

7.2.3 Climate Change and the Proposed Project

Water Resources

Current climate change research generally indicates that the most probable water resources impacts associated with climate change would be related to increases in peak winter flows and decreases in spring and early summer runoff. These factors would result in a reduction of water available for capture within the state and federal water projects, as well as other local water projects and diversions. Without substantial changes in water management, it is therefore likely that climate change could result in reduced deliveries to water contractors in the project area.

As discussed in **Section 3.3, Groundwater Resources**, saline intrusion continues to be an issue in areas bordering San Pablo Bay. Increased groundwater pumping, low rainfall, saline intrusion from San Pablo Bay, low soil permeability, and geothermal upwelling are believed to contribute to declining groundwater levels and poor groundwater quality in portions of the project area. Although the clay content holds water in the soil, it can restrict water percolation to the water table and can, therefore, reduce the volume of groundwater available for irrigation in certain areas. Groundwater pumping in Sonoma and Napa Counties has increased in the past 20 years because of population growth and an increase in agriculture. Several pumping depressions are now evident within Sonoma and Napa Counties, and groundwater levels have generally declined in these areas (Farrar et al 2006; Farrar and Metzger, 2003). The MST groundwater basin has been designated as a groundwater deficient basin by Napa County because of declining groundwater levels.

Predictive climate models have been improved in recent years to provide reasonable stimulations of future climate conditions for snowpack watersheds as those of the Sierra Nevada mountain range. However, the models would not be likely able to provide reasonably accurate results for the project area (e.g., the Russian River watershed) due to highly erratic and variable nature of storm formation in the Pacific region. Preliminary climate modeling results for the Pacific coastal regions have predicted that it could be wetter, drier, or the same. Consequently, the numeric climate models are not a useful water supply planning tool for this region, and the best information SCWA has to predict climate in the region continues to be 95 years of hydrologic information (1909 – 2004 hydrologic period) used as a foundation for SCWA's Russian River System Model. Although SCWA will continue to monitor and evaluate developing modeling capabilities, it is currently not possible to predict with a reasonable degree of accuracy the water resource impacts of climate change on the Russian River watershed (SCWA, 2008), which likely is applicable to the project area.

As described in Chapter 1, Introduction, the NBWRA Member Agencies have initiated programs to promote sustainability and implement energy efficiency and water conservation programs including local recycled water projects as means of adaptive strategies to the effects of climate change. As part of the proposed project, the NBWRA would expand the recycled water use in the North San Pablo Bay region. As discussed in **Section 3.11, Public Services and Utilities**, the proposed project would treat and reuse the wastewater that is otherwise discharged to the San Pablo Bay. The project would therefore offset the potable water supply, making an equivalent amount of potable water available for other uses. Given the increased variability in the precipitation and thus, the water supplies, the proposed project would have a beneficial effect on the water supplies in the region. The proposed project would provide several opportunities for management flexibility and implementation of adaptive management strategies to improve water supply reliability.

Flooding

As discussed in **Section 3.2, Surface Hydrology,** the watersheds within the project area have experienced multiple severe flood events in the last 100 years. The Novato Creek Watershed has experienced five serious floods since 1955, the Petaluma River has had four major floods since 1982, and the Napa River has experienced serious floods 21 times since 1862. Historical trends for annual runoff and peak flows over the last hundred years indicated a decrease in runoff from April to July and an increase in and more variable three-day peak flows (DWR, 2006). Independent climate modeling efforts (Dettinger et. al., 2004 and Miller et. al., 2003), predict that more variable river flows and more frequent flooding events will continue into the future, as a result of climate change.

As discussed further in **Section 3.2, Surface Hydrology,** sea-level rise could cause impacts in certain areas of the proposed project. The Department of Geosciences Environmental Studies Laboratory Climate Change and Sea Level Rise data identifies areas in Marin, Sonoma, and Napa Counties that would likely be susceptible to impacts based on elevation and proximity to San Pablo Bay. Susceptible areas that have been identified include the following portions of the project area:

- the eastern portion of Marin County, north of the community of Santa Venetia, south of State Route 37, east of U.S. 101 and the railroad;
- areas along the Petaluma River, north of the city of Novato;
- areas along the southern portion of Sonoma Creek in Sonoma County; and
- the majority of Napa County, predominantly south of the Northwestern Pacific Railroad, west of the airport, and along the Napa River corridor.

As discussed in **Section 3.2, Surface Hydrology** of the EIR/EIS, some of the project facilities in the above areas would be potentially impacted from sea level rise. To alleviate the significant impact, the project design would take into account the sea level rise potential and address potential impacts related to sea level rise, similar to those applied to facility installation within 100-year flood plains. Design measures may include, but are not limited to: facility siting, access placement, access vault extension above projected water elevation, water tight vaults, and site protection (see **Section 3.2, Surface Hydrology**).

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CHAPTER 8
Environmental Review and Agency Consultation/Coordination

This chapter summarizes public and agency involvement activities undertaken by NBWRA and Reclamation that have been conducted to date for the proposed project, and which satisfy CEQA and NEPA requirements for public scoping and agency consultation and coordination. **Appendix 8A** presents the distribution list that identifies the entities receiving a copy of the draft EIR/EIS. As noted previously, U.S. Bureau of Reclamation (Reclamation) is the lead agency pursuant to NEPA, and Sonoma County Water Agency (SCWA) is acting as the Lead Agency under CEQA.

Since the initial phases of project development in 2005, NBWRA has engaged and consulted with agencies, stakeholders, landowners, and the general public. The consultations assisted the NBWRA in determining the scope of the Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS), identifying the range of alternatives and mitigation measures, and defining potential environmental impacts and impact significance. Consultation included informal agency communications, formal interagency meetings, and public meetings. NBWRA will continue to solicit public and agency input on the project by encouraging review of this EIR/EIS.

8.1 Stakeholder Consultation

The communication strategy for the proposed project involves informing and involving the public about the project, as well as engaging agencies and other stakeholders to partner and collaborate together to move the project forward for public and agency review. To carry-out these goals, a multi-phase public and stakeholder involvement process, involving meetings, newspaper ads, newsletters, and a project website, were developed to establish relationships with stakeholders and community awareness of the project. Between 2005 and the public scoping process in 2008, the NBWRA conducted meetings with lead agencies, city and county governments and local water agencies, environmental and stakeholder groups, homeowners associations in the action area, and potentially affected landowners.

The Member Agencies of NBWRA initially planned on individual recycled water project that were examined and refined through the Engineering Report and Feasibility Study discussed below.

Phase 1 Engineering Foundation Report (2003-2005): Member Agencies, potential stakeholders, local, state and regional agencies helped define alternatives. NBWRA, established under a

Memorandum of Understanding (MOU) in August 2005, undertook cooperative planning efforts over a 30-month period- including 17 bi-monthly technical workshops as well as monthly institutional workshops, with extensive outreach to potential Project stakeholders to define shared objects and develop feasible alternatives toward definition of region-wide water reclamation and reuse project that would enable them to meet those objectives. Under the MOU, Camp, Dresser & McKee, Inc. (CDM) prepared a Phase 1 Engineering Foundation Report. The report, completed in March 2005, represented the submittal of initial results- preliminary information on demands in the study area, possible project configuration, and preliminary cost estimates. This initial report analyzed 15 alternatives.

Phase 2 Feasibility Study Report (2006-2008) and Phase 3 Feasibility Study Report (2009): Project is introduced to public through stakeholders meetings and the NBWRA website. The Phase 2 report, completed in June 2006 and the Phase 3 report, completed in 2009, present an engineering evaluation of a proposed project for a regional approach to use of recycled water in the North San Pablo Bay Area of California. The report describes the Proposed Project area and the key water management problems and needs within the Project area, identifies water reuse opportunities in the project area, develops and analyzes alternative measures that could address the identifies water management needs, and presents an overview of associated legal and institutional requirements.

Concurrent with the technical workshops and feasibility study activities, the Member Agencies initiated public outreach efforts to collect grower or end user information at a broad scale within each Member Agency's service area. Outreach meetings were conducted which identified potential Project participants, discussed grower concerns and needs, reviewed land use mapping for accuracy, and discussed projected future changes in the agricultural industry within each service area. The ongoing outreach efforts are developing agricultural reuse contacts and working towards securing commitments to use recycled water. As Project activities carry on, potential users will continue to be invited to periodically attend NBWRA meetings and meetings with other growers and local industry representatives, and review handouts or reports. Recent public outreach efforts include a series of stakeholder meetings in the study area to introduce the Project to the general public, and development of the NBWRA's Project website, to provide information to the public on the NBWRA and the status of the Title XVI feasibility study process.

8.2 Notice of Preparation and Notice of Intent

NBWRA prepared and distributed several notification packages to inform interested parties of the scoping period and upcoming public scoping meetings.

On July 25, 2008, NBWRA (with SCWA as Lead Agency) published and distributed a Notice of Preparation (NOP) of an EIR to advise interested agencies and the public. The NOP was directly mailed to 63 government agencies and officials, and interested parties, and a postcard notification of the NOP's availability was sent to 580 parties. On July 28, 2008, Reclamation published a Notice of Intent (NOI) to prepare an EIS in the Federal Register to advise interested agencies and the public of the public comment period.

8.3 Scoping Activities

Public scoping activities are conducted as part of compliance with both NEPA and CEQA, but are more formalized under NEPA. Scoping is intended to assist in identifying the final range of actions, alternatives, site design options, environmental resources, and mitigation measures that will be analyzed in an environmental document. The scoping process helps ensure that problems are identified early and properly studied and also helps to eliminate from detailed study those issues that are not critical to the decision at hand.

The approximately 30-day scoping comment period extended from July 25, 2008 through August 28, 2008. The public was invited to submit written comments on the scope, content, and format of the project and environmental analysis by mail, fax, or email to representatives at SCWA or through the NBWRA's project website.

8.3.1 Stakeholder Outreach

During the Public Scoping process, the NBWRA met with potentially interested agencies and stakeholders in May 2008 to provide an overview of the proposed project alternatives and solicit their input. The objective of this effort was to obtain public input on issues as early as possible in the environmental review process.

8.3.2 Stakeholder Meetings

NBWRA and SCWA conducted six stakeholder meetings, two in each of the counties (Marin, Sonoma, and Napa) encompassing the NBWRA service areas, from May 6 through May 8, 2008. The format of each stakeholder meeting program was identical and began with a 15-minute open house during which participants could view exhibit boards with project information including an overview of the regional context, project objectives and purposes, possible alternatives, environmental issues, and the environmental review process. Participants were also encouraged to ask informal questions of project team members to understand the project objectives and alternatives. A formal 20-minute presentation focused on the process, schedule, and role of public comments. Following the presentation, 20 minutes were allotted for public comments on the scope, content, and format of the environmental document. Comments were accepted in writing and project team staff recorded oral comments.

8.3.3 Scoping Meetings

During the Public Scoping Process, NBWRA and SCWA conducted formal scoping meetings to gather input and comments prior to the development of the EIR/EIS. Four meetings were held at the locations below. Approximately 55 people attended the four meetings.

August 4, 2008 6:30 p.m. – 7:30 p.m. Napa Elks Lodge 2804 Soscol Avenue, Napa	August 5, 2008 6:30 p.m. – 7:30 p.m. Margaret Todd Senior Center 1560 Hill Road, Novato	August 6, 2008 6:30 p.m. – 7:30 p.m. Sonoma Community Center 276 East Napa Street, Sonoma	August 6, 2008 9:30 a.m. – 10:30 a.m. ESA Petaluma Offices 1425 N. McDowell Boulevard, Petaluma

The format of each public scoping meeting program was similar to the stakeholder meeting format discussed above. The meeting began with a 30-minute open house during which participants could view exhibit boards with project information including an overview of the regional context, project objectives and purposes, possible alternatives, environmental issues, and the environmental review process. Participants were also encouraged to ask informal questions of project team members to understand the project objectives and alternatives.

Participants were encouraged to sign in and were provided with materials including an agenda, presentation slides, and a comment card. Copies of the NOI and the NOP were available upon request. A formal 20-minute presentation focused on the process, schedule, and role of public comments. Following the presentation, 20 minutes were allotted for public comments on the scope, content, and format of the environmental document. Comments were accepted in writing and project team staff recorded oral comments.

8.3.4 Scoping Report

A Scoping Report was prepared for the NBWRA Agency Members and Reclamation. The report included an overview of scoping requirements; a summary of all comments made during the scoping process, both written and verbal; a description of the issues anticipated to be addressed in the EIR/EIS; and an appendix that included hard copies of all written comments, summaries of the scoping meetings, and other project-related print materials used to inform interested parties about the Proposed Action, project alternatives, and the EIR/EIS.

8.3.5 Public Information Materials

In addition to the NOP, NOI, and Scoping Report, several informational materials were publicly distributed to inform stakeholders about the Proposed Action to solicit their input. These materials are described below.

Newspaper Notices

A press release on the NOP notification was published in the *Santa Rosa Press Democrat, Marin Independent Journal, Napa Sentinel, and Napa Valley Register,* the primary newspapers in the action area, on Friday, July 25, 2008. The advertisements announced SCWA and Reclamation's intention to prepare an EIR/EIS, the places and times of the scoping meetings, SCWA contact information, and the availability of information on the project website and Member Agency's websites.

Notices and press releases were also published individually by Member Agencies including the Novato Sanitary District Newsletter, and a press release by the Napa Sanitation District.

Web Sites and Contact Information

Information on the project, and the environmental review process the environmental analysis was made available through the project website and by contacting NBWRA.

NBWRA Website

The NBWRA website, www.nbwra.org, includes detailed information about the proposed project and relevant studies and reports. The NOP document was posted on the website. Online comments were accepted on the website during the NOP review period.

Local Agency Websites

All the local agency members have had information about the NBWRA on their local agency websites:

Las Gallinas Valley Sanitary District (LGVSD): http://www.lgvsd.org/

Novato Sanitary District (Novato SD): http://www.novatosan.com/

Napa Sanitation District (Napa SD): http://www.napasanitationdistrict.com/

Napa County: http://www.co.napa.ca.us/

North Marin Water District (NMWD): http://www.nmwd.com/

SCWA: http://www.scwa.ca.gov/

Single Point of Contact E-mail Address

The NBWRA maintains a single e-mail address, info@nbwra.org, to make it easier for the public to communicate with the project team. Most e-mails are responded to within a few hours. All e-mails are tracked and followed up on.

Single Point of Contact Phone Hotline

The NBWRA maintains a phone number hotline, (707) 547-1923, as a single point of contact for all phone calls. The phone is answered round-the-clock by an answering service. The project received a number of calls from the public and press were received during the NOP period. Most phone calls have been responded to within a few hours of receiving them. All calls are tracked and followed up on.

General Notification Flyer

Reclamation prepared and NBWRA mailed a stakeholder meeting notification flyer to approximately 220 interested organizations, agencies, elected officials, and residents. A follow-up email was sent to 139 stakeholders with email addresses.

Conference Participation

NBWRA participated in the North Bay Watershed Conference in April 2008. NBWRA representatives provided hand outs on project information and answered questions. NBWRA also participated in the North Creek Watershed Climate Forum on October 1, 2008. The event was sponsored by Sustainability Novato. NBWRA had a table and representatives with information and maps of our project. The project also prepared and had available a special information handout on recycled water sustainability issues. The forum was advertised on the NBWRA website.

Outreach Efforts in the Napa Milliken-Sarco-Tulucay (MST) Area

In addition to the scoping invitation letter there were two other letters mailed to the entire Napa SD service area, one in April and another in October, 2008. Napa County staff participated in several public forums sponsored by a community group called Groundwater Under Local Protection (GULP), as well as in meetings and phone calls with individuals and groups. Both Napa County and Napa SD have provided information and notices about the larger regional NBWRA project and the details of the Napa MST portion of the project. Napa SD released a press story in 2008 about expansion of their recycled water system into an area that connects to the MST area.

8.4 Additional Steps in the Environmental Review Process

In accordance with CEQA and NEPA review requirements, this EIR/EIS will be circulated for public and agency review and comment for a 45-day period following the publishing of the Notice of Availability (NOA) of the EIS by Reclamation, and filing of the Notice of Completion (NOC) with the California State Clearinghouse by SCWA or NBWRA.

Similar to the approach to public scoping, three public hearings have been scheduled in Napa County, city of Novato, and Sonoma County to receive public input on the Draft EIR/EIS. These three public hearings will be held during the public comment period so that any comments received at the meetings can be addressed in the Final EIR/EIS. In addition, written comments from the public, reviewing agencies and stakeholders will be accepted during the public comment period. Following consideration of these comments, a Final EIR/EIS will be prepared and circulated per NEPA and CEQA requirements that will include responses to all comments. SCWA and Reclamation will use the Final EIR/EIS when considering approval of the Proposed Action or an alternative. If the proposed project or other alternative is approved, SCWA will accept CEQA findings and issue a Notice of Determination (NOD) and Reclamation will issue a Record of Decision (ROD) to document that decision.

8.5 Ongoing Agency and Stakeholder Consultation and Coordination

SCWA and Reclamation will continue to proactively engage interested agencies and stakeholders throughout the NEPA, CEQA, and project permitting processes. In particular, SCWA and Reclamation will continue to have regular meetings with the NBWRA Coordination Committee and Member Agencies. SCWA will also meet as needed with other agencies with potential jurisdiction over the Proposed Action, including U.S. Army Corps of Engineers, San Francisco Bay Regional Water Quality Control Board, State Water Resources Control Board, State Lands Commission, California State Office of Historic Preservation, California Department of Public Health, Bay Area Air Quality Management District, and others.

8.6 Compliance with Federal Statutes and Regulations

This section describes the status of compliance with the relevant federal laws, executive orders, and policies, and the consultation that has occurred to date or will occur in the near future. **Table 8-1** summarizes the status of consultation for the requirements that must be met by Reclamation and SCWA and/or individual Member Agencies prior to implementation of the Proposed Action.

Most of these regulations listed in Table 8-1 involve ongoing compliance, which would occur in coordination with preparation of this EIR/EIS. Chapter 3 of this EIR/EIS describes the project impacts.

8.6.1 Federal Endangered Species Act

Pursuant to the Federal Endangered Species Act (FESA), U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have authority over projects that may result in take of a federally listed species. Under FESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take. If there is a likelihood that a project would result in take of a federally listed species, either an incidental take permit, under Section 10(a) of FESA, or a federal interagency consultation, under Section 7 of FESA, is required.

Either an Action Specific Implementation Plan (ASIP) or a Biological Assessment (BA) could be used to address the FESA and California State Endangered Species Act and the California Natural Community Conservation Planning Act (NCCPA) consultation requirements of federal and state agencies. Because the BA to be prepared for the selected project alternative focuses on issues specific to the Proposed Action, it will therefore address the biological assessment requirements. Reclamation will initiate formal consultation with USFWS and NMFS. USFWS and NMFS will then use the BA to develop biological opinions relative to the Proposed Action. DFG will use the BA to address compliance with the California Endangered Species Act and the NCCPA.

8.6.2 Clean Water Act

The Clean Water Act (CWA) is the primary surface water protection legislation throughout the country. The CWA aims to restore and maintain the chemical, physical, and biological integrity of surface waters to support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." The U.S. Environmental Protection Agency is the Federal agency with primary authority for implementing regulations adopted pursuant to the CWA, and has delegated the authority to implement and oversee most of the programs authorized or adopted for CWA compliance to U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Boards (RWQCB).

TABLE 8-1
SUMMARY OF ENVIRONMENTAL COMPLIANCE FOR THE PROPOSED PROJECT

Requirements	Status of Compliance/Expected Completion
National Environmental Policy Act	Ongoing until this EIR/EIS Record of Decision is published
California Environmental Quality Act	Ongoing until this EIR/EIS document is certified and mitigation met
Federal Endangered Species Act and California Endangered Species Act	Ongoing until project Biological Opinion issued (see Section 3.5, Biological Resources)
Magnuson-Stevens Fishery Conservation and Management Act	Ongoing until project Biological Opinion or ASIP issued (see Section, 3.5 Biological Resources)
Clean Water Act Section 401	SCWA will apply for Water Quality Certification after EIR/EIS is approved and project design underway (see Sections 3.5, Biological Resources, and Section 3.4, Water Quality)
Clean Water Act Section 404	SCWA will apply for Wetland Permit after the EIR/EIS is approved and project design underway (see Section 3.5, Biological Resources)
Clean Air Act	In compliance. Conformity analysis is not required. (see Section 3.8, Air Quality)
National Historic Preservation Act and Native American Consultation	Ongoing. Once Section 106 review process is completed, the project will proceed in accordance with conditions stipulated in the agreement with the State Historic Preservation Officer and appropriate agencies (see Section 3.12, Cultural Resources)
Executive Order 11988 - Floodplain Management	Ongoing. The project complies by using this EIR/EIS to identify and assess project effects (see Section 3.2, Surface Hydrology)
Executive Order 11990 - Protection of Wetlands	SCWA will apply for Wetland Permit after the EIR/EIS is approved and project design underway (see Section 3.5, Biological Resources)
Executive Order 12898 - Environmental Justice	In compliance based on EIR/EIS Section 3.16, Environmental Justice.
Migratory Bird Treaty Act	Reclamation and SCWA will comply with provisions of the Migratory Bird Treaty Act (see Section 3.5, Biological Resources)
California Fish and Game Code (Section 1600 Lake or Streambed Alteration Agreement Program)	Ongoing. The project complies with Section 1600 by using this EIR/EIS to identify and address expected project effects (Section 3.5, Biological Resources)
Caltrans Encroachment Permit	SCWA will apply for a Caltrans Encroachment Permit to construct within Caltrans right-of-way prior to construction (see Section 3.7, Transportation and Circulation)
Disabilities Regulations - Americans with Disabilities Act, Rehabilitation Act, and Architectural Barriers Act	Project adheres to the construction guidelines of the Uniform Federal Accessibility Standards and complies with regulations proposed for incorporation into the Americans With Disabilities Act Accessibility Guidelines as a part of design for individual facilities.
Farmland Protection Policy Act	Ongoing. (see Section 3.6, Land Use and Agricultural Resources)
Section 10 of the Rivers and Harbors Act of 1899	Ongoing. This regulation is addressed in coordination with other wetlands regulations (see Clean Water Act, Section 404, above)
NPDES Construction Stormwater Permit	SCWA will comply by preparing and using a Storm Water Pollution Prevention Plan at the time of construction (see Section 3.2, Surface Hydrology)
General Order for Dewatering and Other Low Threat Discharge to Surface Waters	SCWA will comply by preparing and using a permit at the time of construction (see Section 3.2, Surface Hydrology)

8.6.3 Section 10 of the Rivers and Harbors Act of 1899

Under Section 10 of the Rivers and Harbors Act of 1899, the construction of structures in, over, or under, excavation of material from, or deposition of material into "navigable waters" are regulated by USACE. Navigable waters of the United States are defined as those waters subject to the ebb and flow of the tide shoreward to the mean high-water mark or those that are currently used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A Letter of Permission or permit from the USACE is required prior to any work being completed within navigable waters.

NBWRA Member Agencies will obtain the necessary permits from USACE prior to beginning any project-related work in navigable waters.

8.6.4 Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended in 1992) requires Federal agencies to evaluate the effects of Federal undertakings on historical, archaeological, and cultural resources, and to consult with the Advisory Council on Historic Preservation concerning potential effects of Federal actions on historic properties. Before Federal funds are approved for a particular project or prior to the issuance of any license, the effect of the project on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register shall be evaluated.

To comply with the NHPA, notices of public meetings for this project will be sent to the State Historic Preservation Officer (SHPO), which acts as an intermediary for the Advisory Council on Historic Preservation. A copy of this Draft EIR/EIS will be sent to SHPO, as a unit of the California Department of Parks and Recreation, requesting its review and soliciting input on the project. SCWA and Reclamation will coordinate with the Advisory Council on Historic Preservation and SHPO, consistent with Section 106 of the NHPA. A Phase I Cultural Resources Report has been prepared and submitted to Reclamation. Reclamation will use these document to complete Section 106 Consultation with SHPO.

Native American Consultation

Implementing regulations for Section 106 require that Federal agencies identify potentially affected Indian tribes that might have knowledge of sites of religious and cultural significance in the area of potential effects (APE) (36 CFR 800.3[f][2]). If any such properties exist, the regulations require that Federal agencies invite Indian tribes to participate in the Section 106 process as consulting parties.

The Native American Heritage Commission (NAHC) was contacted on April 28, 2008 to request a database search for sacred lands or other cultural properties of significance within or adjacent to the APE. A response was received on April 28, 2008. The sacred lands survey did not identify the presence of cultural resources in the APE. The NAHC provided a list of Native American contacts that might have further knowledge of the action area with respect to cultural resources.

Each person or organization identified by the NAHC was contacted by telephone on April 15, 2008. A meeting was held on June 27, 2008 between ESA archaeologist Heidi Koenig, California State Parks archaeologist Breck Parkman, Nick Tipon and Ken Tipon of the FIGR. The meeting was primarily informational; a general project description was given and preliminary results from the records and literature review as well as initial survey results were outlined.

Additional consultation occurred when ESA archaeologist Heidi Koenig and Nick Tipon of the FIGR conducted a supplemental survey of six locations within the APE on September 4, 2008. The purpose of this effort was to introduce Mr. Tipon to areas previously delineated as sensitive for cultural resources and incorporate any of his additional comments and perspective towards known cultural resources. Consultation with the NAHC is ongoing.

8.6.5 Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact of Federal programs with respect to the conversion of farmland to nonagricultural uses. It ensures that, to the extent possible, Federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) is the agency primarily responsible for implementing the FPPA. Agricultural resources are addressed in Section 3.6 “Land Use and Agriculture”. SCWA and Reclamation will submit this EIR/EIS to the NRCS for its comment.

8.6.6 Executive Order 11988 (Floodplain Management)

Executive Order 11988—Floodplain Management (May 24, 1977) directs Federal agencies to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs and budget requests reflect consideration of flood hazards and floodplain management. Guidance for implementation of the Order is provided in the floodplain management guidelines of the U.S. Water Resources Council (40 CFR 6030; February 10, 1978) and in *A Unified National Program for Floodplain Management*, prepared by the Federal Interagency Floodplain Management Taskforce.

SCWA and Reclamation have considered Executive Order 11988 in their development of this EIR/EIS and have complied with this order.

8.6.7 Executive Order 11990 (Protection of Wetlands)

The purpose of Executive Order 11990 is to “minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.” To meet these objectives, the Order requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The Order applies to:

- acquisition, management, and disposition of Federal lands and facilities construction and improvement projects which are undertaken, financed or assisted by Federal agencies; and

- Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

SCWA and Reclamation have considered Executive Order 11990 in their development of this EIR/EIS and have complied with this order. SCWA has taken a number of actions to minimize project effects on wetlands (see **Section 3.5, Biological Resources**) and will be pursuing a Clean Water Act Section 404 permit from USACE.

8.6.8 Executive Order 12898 (Environmental Justice)

Executive Order 12898, Section 2-2, requires all Federal agencies to conduct programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color or national origin. Section 1-101 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority and low-income populations. This Draft EIR/EIS has identified and described the project's potential to result in disproportionately high and adverse human health or environmental effects on minority and low-income populations (see **Section 3.15, Environmental Justice**), as required by this order.

CHAPTER 9
Irreversible and Irretrievable Commitments of Resources

NEPA Section 102(2)(c)(v) and 40 CFR 1502.16 requires that an EIS include a discussion of the irreversible and irretrievable commitments of resources which may occur should the project be implemented. Similarly, the CEQA Guidelines require a discussion of the significant irreversible environmental changes which would be involved in the project should it be implemented. Significant irreversible environmental changes under CEQA are identified as potentially significant and unavoidable impacts in **Chapter 3** of this EIR/EIS.

Irreversible commitments of resources are those which cause either direct or indirect use of natural resources such that the resources cannot be restored or returned to their original condition. For example, the extirpation of a species from an area is an irreversible commitment. Construction activities of the proposed facilities would result in an irretrievable and irreversible commitment of natural resources though direct consumption of fossil fuels and use of materials. The proposed project activities would require connections to existing power sources, which would increase the short-term use of electricity and refined petroleum products during the operation of construction equipment (primarily gas, diesel, and motor oil). However, the energy consumption for construction would not result in long-term depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Construction activities would not reduce or interrupt existing electrical or natural gas services such that existing supplies would be constrained.

Depending upon the project components, the Action Alternatives (Basic System, Partially Connected System, and Fully Connected System) would result in progressively greater irreversible and irretrievable commitment of energy and material resources during project construction, operation, and maintenance, in the following forms:

- Energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles, and during operation of distribution facilities.
- Construction materials; and
- Labor;

The use of the nonrenewable resources is expected to account for a minimal portion of the region's resources and would not affect the availability of these resources for other needs within the region. Additional information on is available in **Sections 3.11, Public Services and Utilities; 3.6, Land Use**; and **3.5, Biological Resources**.

CHAPTER 10
Relationship of Short-Term Uses and Long-Term Productivity

NEPA Section 102(2)(c)(iv) and 40 CFR 1502.16 requires that an EIS include a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. This chapter describes how the Proposed Action would affect the short-term use and the long-term productivity of the environment.

In reference to the Proposed Action, "short-term" refers to the temporary phase of construction of the proposed project, while "long-term" refers to the operational life of the proposed project and beyond. **Chapter 3** of this EIR/EIS evaluates the short-term and long-term effects that could result from the Proposed Action.

Construction of the Proposed Action would result in short-term construction-related impacts such as interference with local traffic and circulation, limited air emissions, increase in ambient noise levels, dust generation, disturbance of wildlife, increased storm runoff, and disturbance of recreational and other public facilities. These impacts would be temporary and would occur only during construction, and are not expected to alter the long-term productivity of the natural environment.

The Proposed Action would assist in the long-term productivity of the North Bay Region's urban, agricultural, and habitat uses by improving the reliability of the water supplies in the action area through the offset of potable water sources that are used for irrigation. It would assist in the long-term productivity of the environment by reducing discharge into the San Pablo Bay and recovering highly treated wastewater prior to its discharge and recycling that water for irrigation. The Proposed Action would also result in enhancing the long-term productivity of the Napa-Sonoma Salt Marsh ponds by providing a clean, reliable water supply to reduce the salinity of the ponds. These long-term beneficial effects of the Proposed Action would outweigh the potentially significant, but mitigable short-term impacts to the environment resulting primarily from project construction.

CHAPTER 11
Mitigation Monitoring and Reporting Program

This chapter summarizes the mitigation measures that would be integrated into the proposed project (i.e., North Bay Water Recycling Program or NBWRP) to reduce the potentially significant impacts to a less-than-significant level. Also provided is a Mitigation Monitoring and Reporting Program (MMRP) organized in a tabular format, keyed to each mitigation measure incorporated into the project. The tables following each measure provide a breakdown of how the mitigation measure would be implemented, who would be responsible, and when it would occur. The tables consist of four column headings which are defined as follows:

- *Implementation Procedure*: If needed, this column provides additional information on how the mitigation measures would be implemented.
- *Monitoring and Reporting Actions*: This column contains an outline of the appropriate steps to verify compliance with the mitigation measure.
- *Monitoring Responsibility*: This column contains an assignment of responsibility for the monitoring and reporting tasks.
- *Monitoring Schedule*: This column provides a general schedule for conducting each monitoring and reporting task, identifying where appropriate both the timing and the frequency of the action.
- *Responsible Agency*: This column states the agency, which would be responsible for implementing the mitigation measure.

Geology and Soils

Impact 3.1.1: Seismicity

In the event of a major earthquake in the Bay Area Region, the proposed facilities could be subject to fault rupture, severe ground shaking, liquefaction, or earthquake induced landslides capable of causing injury, structural damage, pipeline rupture and service interruption.

Mitigation Measure 3.1.1

The Member Agencies will implement the following measures:

- All proposed improvements will be designed and constructed in accordance with current geotechnical industry standard criteria, including the California Building Code (CBC) and American Waterworks Association (AWWA) criteria.

- The project construction materials and backfill materials will be designed according to a geotechnical investigation by a California-licensed geotechnical engineer or engineering geologist to address landslide, subsidence, liquefaction, and expansive soils and seismic hazards such as ground shaking and liquefaction.

- Implementation of industry standard geotechnical measures such as replacing excavated soils with engineered fill materials are effective means to overcome the potential for subsidence. If excavated soils are to be reused for backfill, they would still be appropriately compacted to mitigate the potential for subsidence or settlement and evaluated for expansion and amended, if necessary, to reduce the potential for expansion in accordance with accepted geotechnical practices.

- Proposed facilities will be designed to include flexible connections, where deemed necessary, along with backfill requirements that minimize the potential for significant damage. All other associated improvements will employ standard design and construction using the most recent geotechnical practices and California Building Code (CBC) seismic criteria, which would provide conservative design criteria.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Design improvements with current geotechnical industry standard criteria. 2. Conduct geotechnical investigation and design construction and backfill material accordingly. 3. Replace excavated soils with engineered fill or properly compacted excavated soils if reused. After placing backfill, evaluate soil's potential for expansion. 4. Design facilities to include flexible connections.	1. Incorporate design improvements into construction specifications; Comply with CBC and AWWA. 2. Incorporate design recommendations into construction specifications. 3. Incorporate procedure into construction specifications. 4. Incorporate flexible connections into construction specifications.	1. Member Agency 2. Contractor/ Member Agency 3. Contractor/ Member Agency 4. Member Agency	1. Prior to Construction 2. Prior to Construction 3. During Construction 4. Prior to Construction	Member Agency

Impact 3.1.2: Erosion

Project construction activities could result in short-term erosion and loss of topsoils.

Mitigation Measure 3.1.2

The Member Agencies will implement the following measures:

- Consistent with SWPPP requirements, the construction contractor shall be required to implement BMPs for erosion control onsite. The use of construction BMPs will minimize the potential for erosion and loss of topsoil, and shall include, without limitation, the following:
- Avoid scheduling construction activities during a rain event, but be prepared for sudden changes in conditions;
- Construct berms, silt fences, straw bales, fiber rolls, and/or sand bags around stockpiled soils;
- Cover stockpiled soils during a rain event and monitor perimeter barriers, repair as necessary;
- Stabilize entrances to work area to prevent tracking of dirt or mud onto roadways; and
- Implement dust control practices as appropriate on all stockpiled material.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Prepare a SWPPP. 2. Schedule construction to avoid rainy season. 3. Construct berms and install silt fences, straw bales, fiber rolls, and/or sand bags around stockpiled soils. 4. Cover stockpiled soils during a rain event and monitor perimeter barriers; repair as necessary. 5. Stabilize entrances to work area to prevent tracking of dirt or mud onto roadways. 6. Implement dust control practices as appropriate on all stockpiled material.	1. Incorporate erosion control BMPs into construction specifications. 2. Incorporate schedule into construction specifications. 3. Incorporate use of these measures into construction specifications. 4. Incorporate use of these measures into construction specifications. 5. Incorporate use of these measures into construction specifications. 6. Incorporate use of these measures into construction specifications.	1. Member Agency 2. Member Agency 3. Contractor/ Member Agency 4. Contractor/ Member Agency 5. Contractor/ Member Agency 6. Contractor/ Member Agency	1. Prior to Construction 2. Prior to and During Construction 3. During Construction 4. During Construction 5. During Construction 6. During Construction	Member Agency

Impact 3.1.3: Unstable Soils

Project improvements could be located on expansive soils that over time could cause damage to foundations and pipelines resulting in service disruptions.

Mitigation Measure

The Member Agencies will implement the Mitigation Measure 3.1.1.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.1.1	1. Incorporate use of these measures into construction specifications.	1. Contractor/ Member Agency	1. Prior to and During Construction	Member Agency

Impact 3.1.4: Expansive Soils

Project improvements could be located on expansive soils that over time could cause damage to foundations and pipelines resulting in service disruptions.

Mitigation Measure

The Member Agencies will implement the Mitigation Measure 3.1.1.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.1.1	1. Incorporate use of these measures into construction specifications.	1. Contractor/ Member Agency	1. Prior to and During Construction	Member Agency

Surface Hydrology

Impact 3.2.1: Changes in Drainage Patterns

Project construction could modify existing drainage patterns.

Mitigation Measure 3.2.1

The Member Agencies would implement the following measure during pipeline installation at stream crossings:

- Schedule construction so as to avoid storm events to the extent feasible;
- Use trenchless techniques such as jack and bore tunneling to avoid direct impacts to the streams;
- Employ short-term drainage diversion and control measures such as sandbags, dikes, pumps, or other means; and
- Following construction, restore the construction area to pre-existing conditions

- Implement **Mitigation Measure 3.5.1** (see Section 3.5).

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Schedule construction to avoid rainy season. 2. Integrate trenchless techniques such as jack and bore to avoid streams. 3. Employ short-term drainage diversion and control measures such as sandbags, dikes, pumps, or other means. 4. Restore site to pre-existing conditions.	1. Incorporate schedule into construction specifications. 2. Incorporate use of trenchless techniques into construction specifications. 3. Incorporate use of these measures into construction specifications. 4. Inspect final site conditions after construction and verify its condition is it equivalent to that prior to construction. Incorporated into construction specifications.	1. Member Agency 2. Contractor/ Member Agency 3. Contractor/ Member Agency 4. Contractor/ Member Agency	1. Prior to and During Construction 2. Prior to Construction 3. During Construction 4. After Construction	Member Agency

Impact 3.2.3: Increased Storm Runoff

New impervious surfaces for NBWRP would result in an increase in storm runoff.

Mitigation Measure 3.2.3

The Member Agencies will implement the following measures:

- Comply with the local storm drainage requirements;
- Incorporate site design features to control any site runoff onsite; and
- Install storm runoff, collection, and treatment system, as applicable, to control the runoff flow offsite.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Comply with the local storm drainage requirements. 2. Incorporate site design features to control any site runoff onsite.	1. Incorporate requirements into construction specifications. 2. Incorporate features into construction specifications.	1. Member Agency 2. Member Agency 3. Contractor/ Member Agency	1. Prior to Construction 2. Prior to Construction 3. During and After Construction	Member Agency

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
3. Install storm runoff, collection, and treatment system, as applicable, to control the runoff flow offsite.	3. Monitor efficacy of system and regularly maintain it.			

Impact 3.2.4: Flooding – Sea Level Rise

Sea-level rise could affect operation of project facilities.

Mitigation Measure 3.2.4

Design of proposed facilities shall consider sea level rise potential, and shall include appropriate measures in facility siting and design to address potential impacts related to sea level rise, similar to those applied to facility installation within 100-year flood plains. Design measures may include, but are not limited to: facility siting, access placement, access vault extension above projected water elevation, water tight vaults, and site protection.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Design facility to address potential impacts related to sea level rise. Design measures may include but are not limited to: facility siting, access placement, access vault extension above projected water elevation, water tight vaults, and site protection.	1. Incorporate design requirements into construction specifications.	1. Member Agency	1. Prior to construction	LGVSD/NMWD, Novato SD/ NMWD, SVCSD

Groundwater Resources

Impact 3.3.2: Hydrostatic Pressure

Proposed facilities may be affected by shallow groundwater levels and natural groundwater fluctuations.

Mitigation Measure 3.3.1

The Member Agencies will implement the following measures:

- All proposed improvements will be designed and constructed in accordance with current geotechnical industry standard criteria.
- Implement industry standard geotechnical measures to address high groundwater conditions as appropriate to reduce the potential for impacts related to groundwater fluctuation, in accordance with accepted geotechnical practices. Possible design features include drainage blankets, perimeter pumps to temporarily decrease hydrostatic pressure, perimeter drainage trenches, and specific groundwater monitoring scenarios.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Design improvements with current geotechnical industry standard criteria. 2. Design improvements to address high groundwater conditions in accordance with accepted geotechnical practices. Possible design features include but are not limited to: drainage blankets, perimeter pumps to temporarily decrease hydrostatic pressure, perimeter drainage trenches, and specific groundwater monitoring scenarios.	1. Incorporate design requirements into construction specifications. 2. Incorporate design requirements into construction specifications.	1. Member Agency 2. Member Agency	1. Prior to construction 2. Prior to construction	Member Agency

Water Quality

Impact 3.4.1: Short Term Construction-Related Effects

Disturbance of soils during construction of new project-related infrastructure could generate short term erosion-related water quality impacts. Construction activities could result in the accidental release of fuels or hazardous materials. Project construction activities could require dewatering that could result in the discharge of turbid waters into the local storm drain systems or nearby creeks.

Mitigation Measure 3.4.1a

NPDES Construction Activity Stormwater Permit. Member Agencies or their contractor shall comply with the provisions of the NPDES Construction Activity Stormwater permit, including preparation of Notice of Intent to comply with the provisions of this General Permit and preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will identify implementation measures necessary to mitigate potential water quality degradation as a result of

construction-related runoff. These measures will include BMPs and other standard pollution prevention actions, such as erosion and sediment control measures, proper control of non-stormwater discharges, and hazardous spill prevention and response. The SWPPP will also include requirements for BMP inspections, monitoring, and maintenance.

The following items are examples of BMPs that would be implemented during construction to avoid causing water quality degradation:

- Erosion control BMPs, such as use of mulches or hydroseeding to prevent detachment of soil, following guidance presented in the California BMP Handbooks – Construction (CASQA 2003). A detailed site map will be included in the SWPPP outlining specific areas where soil disturbance may occur, and drainage patterns associated with excavation and grading activities. In addition, the SWPPP will provide plans and details for the BMPs to be implemented prior, during, and after construction to prevent erosion of exposed soils and to treat sediments before they are transported offsite.
- Sediment control BMPs such as silt fencing or detention basins that trap soil particles.
- Construction staging areas designed so that stormwater runoff during construction will be collected and treated in a detention basin or other appropriate structure.
- Management of hazardous materials and wastes to prevent spills.
- Groundwater treatment BMPs such that localized trench dewatering does not impact surface water quality.
- Vehicle and equipment fueling BMPs such that these activities occur only in designated staging areas with appropriate spill controls.
- Maintenance checks of equipment and vehicles to prevent spills or leaks of liquids of any kind.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Submit Notice of Intent and SWPPP for the NPDES General Construction Permit 2. Incorporate BMPs in standard construction procedures	1. Comply with the SWPPP and NPDES permit requirements 2. Implement BMPs	1. Contractor 2. Contractor/ Member Agency	1. Prior to construction 2. During and following construction	Member Agency

Impact 3.4.6: Surface Water Storage

The proposed project would include storage of recycled water at existing WWTP facilities, as well as at individual user properties. Storage of recycled water quality would have the potential to affect localized surface water quality or groundwater quality.

Mitigation Measure 3.4.6a

Under the Master Recycling Permit for each Member Agency and Cooperating Agency, user agreements shall include provisions for compliance with Title 22 and the State Recycled Water Policy regarding storage and use of recycled water onsite at individual properties.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Incorporate provisions for compliance with Title 22 and State Recycled Water Policy in user agreements. 2. Comply with provisions in the user agreement	1. Execute agreement 2. Execute agreement	1. Member Agency/Users 2. Member Agency/Users	1. During project operation (recycled water use) 2. During project operation (recycled water use)	Member Agency/ Users

Mitigation Measure 3.4.6b

Prior to storage of recycled water in any "on-stream" storage facility that directly receives and releases stream flow, each Member Agency or Cooperating Agency shall enter into discussions with RWQCB regarding operational requirements to ensure operation of proposed facilities in compliance with Title 22 and the State Recycled Water Policy. It is anticipated that specific operational standards, such as pumping on-stream ponds dry prior to the onset of winter rains or other measures, would be required in order to ensure storage in compliance with Title 22.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Enter into discussions with San Francisco Bay RWQCB regarding operational requirements for the proposed facilities. 2. Comply with requirements	1. Incorporate requirements into standard operational procedures. 2. Incorporate requirements into standard operational procedures.	1. Member Agency 2. Member Agency	1. Project operation/ prior to storage of recycled water 2. Project operation	Member Agency

Impact 3.4.9: Reuse for Habitat Restoration

Disinfected tertiary-treated wastewater from the SVCSD WWTP would be delivered to the Napa Salt Marsh ponds as a dilution source for bittern ponds, thereby improving water quality.

Mitigation Measure 3.4.9a

SVCSD and Napa SD (as appropriate) shall implement the following measures:

- Prepare a Management Plan required by the San Francisco Bay RWQCB to obtain a discharge prohibition. The management plan will comply with the RWQCB Resolution 94-086. The management plan will include the following features for Ponds 7 and 7A:

  a) Facility Plan, includes project purpose and objectives, site selection factors, site sampling and analyses, planning and design elements.

  b) Operations and Maintenance plan, includes vegetation planning and harvesting, channel and bank maintenance, pump and gate maintenance, vector controls, and contingency/emergency plans.

  c) Monitoring Program, includes monitoring of pollutants, habitat diversity, wildlife use, and vector populations; and

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Prepare Management Plan in compliance with RWQCB's requirements. 2. Implement the Management Plan	1a. Incorporate requirements in the Management Plan 1b. Incorporate Facility Plan, Operations and Maintenance plan, and monitoring program in the Management Plan. 2. Report results as required	1a. SVCSD/ Napa SD 1b. SVCSD/Napa SD 2. SVCSD/ Napa SD	1a. Prior to operation 1b. Prior to operation 2. During operation	SVCSD and Napa SD

Biological Resources

Impact 3.5.1: Impacts on Wetlands, Streams and Riparian Habitats

Construction of the Proposed Project could result in impacts to jurisdictional wetlands and other waters of the United States, as well as impacts to riparian habitat.

Mitigation Measure 3.5.1

Implement the following measures to avoid, minimize and compensate for impacts to jurisdictional wetlands and other waters of the U.S. and impacts to riparian habitat.

Construction activities resulting in the introduction of fill or other disturbance to jurisdictional wetlands and other waters of the U.S. will require permit approval from the U.S. Army Corps of Engineers and water quality certification from the Regional Water Quality Control Board, pursuant to Section 401 of the Clean Water Act. The Proposed Project will most likely be authorized under Nationwide Permit #12 (Utility Lines) pursuant to Section 404 of the Clean Water Act. The CDFG has jurisdiction in the project area over riparian habitat, including stream

bed and banks, pursuant to Sections 1600-1616 of the Fish and Game Code. Pipeline construction resulting in alteration to channel bed or banks, extending to the outer dripline of trees forming the riparian corridor, is subject to CDFG jurisdiction. The project proponent will be required to obtain a Streambed Alteration Agreement (SAA) from the CDFG. Terms of these permits and SAA will likely include, but will not necessarily be limited to, the mitigation measures listed below.

1) Specific locations of pipeline segments, storage reservoirs, and pump stations shall be configured, wherever feasible, to avoid and minimize direct and indirect impacts to wetlands and stream drainage channels. Consideration taken in finalizing configuration placement shall include:

   - Reducing number and area of stream channel and wetland crossings where feasible. Crossings shall be oriented as close to perpendicular (90 degree angle) to the drainage or wetland as feasible.

   - Placement of project components as distant as feasible from channels and wetlands.

   - For pipeline construction activities in the vicinity of wetland and stream drainage areas, the construction work area boundaries shall have a minimum 20-foot setback from jurisdictional features[1]. Pipeline construction activities in proximity to jurisdictional features include: 1) entrance and exit pits for directional drilling and bore and jack operations; and 2) portions of pipeline segments listed as "parallel" to wetland/water features.

2) Sites identified as potential staging areas will be examined by a qualified biologist prior to construction. If potentially jurisdictional features are found that could be impacted by staging activities, the site will not be used.

3) Construction methods for channel crossing shall be designed to avoid and minimize direct and indirect impacts to channels to the greatest extent feasible. Use of trenchless methods including suspension of pipeline from existing bridges, directional drilling, and bore and jack tunneling will be used when feasible. Trenchless methods are required for all perennial drainage crossings (i.e., Sonoma Creek). Construction occurring in the vicinity of riparian areas shall be delimited with a minimum 20-foot setback to avoid intrusion of construction activities into sensitive habitat.

   The following additional measures shall apply to channel crossings in which the trenching construction method is used:

   - Limiting of construction activities in drainage channel crossings to low-flow periods: approximately April 15 to October 15.

   - At in-road drainage crossings where drainages pass beneath the road in existing culverts, and where there is sufficient cover between the culvert and road surface, the new pipeline will be installed above the existing culvert without removing or disturbing it. If the pipeline must be installed below the existing culvert, then the culvert will be cut and temporarily removed to allow pipeline installation.

[1] Setbacks of channels with associated riparian vegetation will be from the outer dripline edge of the riparian corridor canopies and/or the upper bank edge, or per City or County code, whichever is greater.

- At off-road drainage crossings, the construction corridor width will be minimized to the greatest extent feasible at the crossing and at least 20 additional feet to either side of the drainage at the crossing.
- If disturbance of the existing culvert is required, sediment curtains upstream and downstream of the construction zone shall be placed to prevent sediment disturbed during trenching activities from being transported and deposited outside of the construction zone.

4) Implement BMPs required in **Mitigation Measure 3.4.1** to reduce risk of sediment transport into all construction areas in proximity of drainages.

5) For channels or wetlands for which soil removal is necessary (off-road crossings or wetlands to be trenched or otherwise directly disturbed), the top layer of the drainage or wetland bottom shall be stockpiled and preserved during construction. After the pipeline has been installed, the stockpiled material shall be placed back into the drainage or wetland feature to return the beds to approximately their original composition.

6) To offset temporary and permanent impacts to wetlands and other waters of the U.S., and impacts to riparian habitat, compensatory mitigation will be provided as required by regulatory permits and SAAs.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Acquire permits from USACE, CDFG, and RWQCB. 2. Implement Best Management Practices (BMPs). 3. Stockpile excavated soil. 4. Implement compensatory mitigation.	1. Comply with regulatory permit. 2. Sign-off on inspection report and/ or MMRP. 3. Sign-off on inspection report and/ or MMRP. 4. Comply with regulatory permits and SAAs.	1. Member Agency 2. Contractor 3. Contractor 4. Member Agency	1. Prior to Construction 2. During Construction 3. During Construction 4. Prior to and During Construction	Member Agency

Impact 3.5.2: Construction Impacts on Special-status Fish and California Freshwater Shrimp

Construction of Proposed Project facilities could affect special-status invertebrate or fish species including central California coast steelhead, Chinook salmon, California freshwater shrimp, Pacific lamprey, and Sacramento splittail, or designated critical habitat for steelhead.

Mitigation Measure 3.5.2

Specific measures shall be implemented to protect aquatic habitats potentially inhabited by special-status fish and California freshwater shrimp.

Sensitive fisheries and other aquatic resources shall be protected by minimizing in-stream and near-stream habitat impacts during project design, informally consulting with resource agencies (NMFS, USFWS, CDFG, and USACOE), and implementing protective measures. For Sonoma Creek, Petaluma River, Napa River, and other perennial drainages, special-status fish are presumed present. California freshwater shrimp are presumed present in Sonoma Creek. Because of the sensitivity of seasonal and ephemeral drainages, the following measures will be required to avoid and minimize impacts to aquatic habitat:

1) Project designs shall be reconfigured, whenever feasible, to avoid direct impacts to sensitive wetland areas and minimize disturbances to wetland and riparian corridors. Ground disturbance and construction footprints in these areas shall be minimized to the greatest degree feasible.

2) If trenching or directional boring stream crossing methods are used, the construction schedule of such activities shall be implemented according to conditions of the SAAs.

3) In-stream construction shall be avoided at all locations that are known, or presumed, to support threatened or endangered species, if at the time of construction such locations contain flowing or standing water.

4) In the event that equipment shall operate in any watercourse with flowing or standing water, the project proponent will ensure that they have the appropriate permit authorizations.

5) Prior to construction, a qualified biologist shall install fencing to establish a minimum 20-foot setback from sensitive habitat.

6) For work sites located adjacent to sensitive aquatic sites, a biological resource education program shall be provided by a qualified biologist, as per conditions of the SAAs.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Consult with resource agencies . 2. Implement recommendations derived during consultation.	1. Design protective measures. 2. Comply with permit conditions; sign-off on inspection report and/or MMRP	1. Member Agency 2. Contractor	1. Prior to Construction 2. During Construction	Member Agency

Impact 3.5.3: Long term Impacts on Special-status Fish

Operation of the proposed project has the potential to affect special-status fish species due to reduced discharges from the WWTPs.

Mitigation Measure 3.5.3

Implementation of **Mitigation Measure 3.5.5** for the protection of California red-legged frogs and **Mitigation 3.5.1** for protection and restoration of wetlands would protect special-

status invertebrates that could potentially be impacted by the project. No specific mitigation is required.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.5.1. 2. Implement Mitigation Measure 3.5.5.	1. Comply with regulatory permit; sign-off on inspection report and/ or MMRP. 2. Comply with permit conditions; sign-off on inspection report and/or MMRP.	1. Member Agency/ Contractor 2. Contractor/ Qualified Biologist	1. Prior to and During Construction 2. Prior to Construction	Member Agency

Impact 3.5.4: Impacts on Special-status Invertebrates

Construction of Proposed Project facilities could impact special-status invertebrates including Myrtle's silverspot butterfly, Opler's longhorn moth, Monarch butterfly wintering sites, Ricksecker's water scavenger beetle and California brackishwater snail.

Mitigation Measure 3.5.3

Mitigation Measure 3.5.3 would reduce potential impacts on special-status invertebrates to a less-than-significant level.

Implementation of **Mitigation Measure 3.5.5** for the protection of California red-legged frogs and **Mitigation 3.5.1** for protection and restoration of wetlands would protect special-status invertebrates that could potentially be impacted by the project. No specific mitigation is required.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.5.3. 2. Implement Mitigation Measure 3.5.1. 3. Implement Mitigation Measure 3.5.5.	1. Comply with regulatory permit; sign-off on inspection report and/ or MMRP. 2. Comply with regulatory permit; sign-off on inspection report and/ or MMRP. 3. Comply with permit conditions; sign-off on inspection report and/or MMRP	1. Member Agency 2. Member Agency/ Contractor 3. Contractor/ Qualified Biologist	1. Prior to and During Construction 2. Prior to and During Construction 3. Prior to and During Construction	Member Agency

Impact 3.5.5: Impacts on Western Pond Turtle

Construction of the proposed project has the potential to impact western pond turtles in upland and aquatic habitat.

Mitigation Measure 3.5.5

Implement protection measures to avoid and minimize impacts to western pond turtles.

- When working within 200 feet of stream crossings, all construction personnel shall receive awareness training relating to the protection of western pond turtles, in accordance with the SAAs. Also, to minimize the likelihood of encountering turtles in upland areas near stream crossings, construction footprints shall be minimized to the greatest extent feasible. Based on reconnaissance-level surveys, if staging and construction activities occur principally within or immediately adjacent to project alignment roads the project will be outside of principal pond turtle habitat.

- Within 48 hours prior to the start of construction activities, a qualified biologist shall perform pond turtle surveys within suitable habitat within projected work areas. If a pond turtle nest is located within a work area, a biologist with the appropriate permits may move the eggs to a suitable facility for incubation, and release hatchlings into the creek system in late fall.

The measures proposed for protection of aquatic species and red-legged frogs (**Mitigation Measure 3.5.2 and Mitigation Measure 3.5.6**) will additionally protect western pond turtles during construction.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct awareness training for construction personnel working within 200 feet of stream crossings. 2. Conduct pond turtle surveys; move eggs if necessary. 3. Implement Mitigation Measure 3.5.2. 4. Implement Mitigation Measure 3.5.6.	1. Comply with SAA permit; sign-off on inspection report and/ or MMRP. 2. Comply with regulatory permits; sign-off on inspection report and/ or MMRP 3. Comply with permit conditions; sign-off on inspection report and/or MMRP 4. Comply with SAA permit conditions; sign-off on inspection report and/or MMRP.	1. Contractor/ Member Agency 2. Qualified Staff Biologist 3. Contractor 4. Contractor/ Qualified Biologist	1. Prior to construction 2. 48 hours Prior to Construction 3. Prior to and During Construction 4. Prior to and During Construction	Member Agency

Impact 3.5.6: Impacts on California Red-legged Frog

Construction of the Proposed Project has the potential to affect California red-legged frogs, if present.

Mitigation Measure 3.5.6

Protection measures to avoid and minimize impacts on California red-legged frogs.

1) The implementation of measures identified for the protection of special-status fish and California freshwater shrimp would also protect California red-legged frogs within aquatic habitat. All protection measures identified in **Mitigation Measure 3.5.2** shall be applied to the protection of red-legged frogs at sites that provide potential aquatic habitat for this species. These include informal USFWS consultation, avoiding aquatic habitat, establishing a suitable buffer from the aquatic habitat (e.g., 50 feet), and implementing a worker education program.

2) All work activities within or adjacent to aquatic habitat that is potentially occupied by red-legged frogs will be completed between May 1 and November 1.

3) A qualified biological resource monitor will conduct a training session for construction personnel working in upland habitat near potentially occupied drainages, as per conditions of the SAAs.

4) All trash that could attract predators will be regularly contained and removed from the work site.

In the event trenchless methods cannot be employed, the project proponent would obtain appropriate permit authorizations and implement construction methods per applicable Streambed Alteration Agreements.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.5.2. 2. Complete all work within or adjacent to aquatic habitat that is inhabited by red-legged frogs between May 1 and November 1 3. Conduct training sessions for construction personnel working in upland habitat near potential occupied drainages. 4. Implement trash removal and trenchless construction methods where necessary.	1. Comply with permit conditions; sign-off on inspection report and/or MMRP. 2. Incorporate into contract specifications. 3. Comply with SAA permit conditions; sign-off on inspection report and/or MMRP. 4. Comply with SAA permit conditions; sign-off on inspection report and/or MMRP.	1. Contractor/ Qualified Biologist 2. Contractor 3. Qualified Biologist/ Construction Personnel 4. Contractor	1. Prior to and During Construction 2. During Construction 3. During Construction 4. During Construction	Member Agency

Impact 3.5.7: Impacts on Threatened and Endangered Marsh Birds

Construction of the proposed project has the potential to affect western snowy plover, California black rail and California clapper rail and their habitat in and near the project alignments.

Mitigation Measure 3.5.7

To minimize the likelihood of project effects on threatened and endangered marsh birds, the following mitigation measures will be implemented:

- Protocol-level surveys will be conducted in locations with suitable habitat to determine species presence or absence.
- Agency consultation will be initiated.
- Construction activities will occur during the non-breeding season, September 15 through January 31. The combined breeding season for all three species extends from February 1 through September 14.
- Construction personnel will receive environmental awareness training specific to the identification of clapper rails, black rails, western snowy plover and their habitat.
- Any clapper rail and western snowy plover activity will be immediately reported to the USFWS; black rail activity will be reported to the CDFG.
- Construction activities will be constrained to the smallest area possible to minimize marsh disturbance.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct protocol-level surveys in areas that contain suitable nesting bird habitat 2. Initiate consultation with resource agency. 3. Adhere to construction schedule with respect to bird breeding season. 4. Conduct training sessions for construction personnel specific to identification of sensitive bird habitat. 5. In the event of presence of sensitive birds, coordinate with CDFG and/ or USFWS.	1. Incorporate survey results and recommendations into project contract specifications. 2. Develop and implement avoidance measures. 3. Incorporate into contract specifications. 4. Incorporate into contract specifications; sign-off on inspection report and/or MMRP. 5. Implement avoidance measures derived from agency coordination.	1. Qualified Staff Biologist 2. Member Agency 3. Contractor/ Member Agency 4. Qualified Biologist/ Construction Personnel 5. Contractor/ Member Agency	1. Prior to Construction 2. Prior to Construction 3. During Construction 4. Prior to Construction 5. During Construction	Member Agency

Impact 3.5.8: Impacts on Burrowing Owl

Construction of the proposed project could result in direct and indirect impacts to burrowing owls, if present in portions of the project alignment.

Mitigation Measure 3.5.8

The following measures to avoid, minimize, or mitigate impacts on burrowing owls would be incorporated into the project.

- In areas identified to provide potential burrowing owl habitat, preconstruction surveys for burrowing owls would be conducted by a qualified biologist 14-30 days prior to the start of construction. Surveys would cover grassland areas within 500-foot buffer and check for adult and juvenile burrowing owls and their habitat.

- Construction exclusion areas would be established around the occupied burrows in which no disturbance would be allowed to occur. During the non-breeding season (September 1 through January 31), the exclusion zone would extend 160 feet around occupied burrows. During the breeding season (February 1 through August 31), exclusion areas would extend 250 feet around occupied burrows. Passive relocation of owls is not proposed.

- A qualified biologist (the on-site monitor or otherwise) will monitor owl activity on the site to ensure the species is not adversely affected by the project.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct surveys for adult and juvenile burrowing owls within a 500-foor buffer. 2. Establish construction exclusion areas of appropriate size, as defined by breeding seasons). 3. Monitor owl activity on construction sites.	1. Incorporate survey results and recommendations into project contract specifications. 2. Incorporate in contract specifications. 3. Summarize results and recommendations in daily log; sign-off on inspection report and/or MMRP.	1. Qualified Biologist 2. Contractor 3. Qualified Biologist	1. 14-30 days Prior to Construction 2. Prior and During Construction 3. During Construction	Member Agency

Impact 3.5.9: Impacts on Nesting Birds

Construction of the proposed project has the potential to affect nesting birds including Swainson's hawk, willow flycatcher, sharp-shinned hawk, Cooper's hawk, tri-colored blackbird, Bell's sage sparrow, golden eagle, northern harrier, California yellow-warbler, white-tailed kite, California horned lark, salt marsh common yellowthroat, loggerhead shrike, San Pablo song sparrow, California thrasher, rookeries, and additional bird species protected by California Fish and Game Code Section 3503 and the federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989).

Mitigation Measure 3.5.9

The appropriate Member Agency shall implement the following protection elements to avoid disturbing common and special-status nesting birds:

- Whenever feasible, vegetation shall be removed during the non-breeding season (generally defined as September 1 to January 31).
- For ground disturbing activities occurring during the breeding season (generally defined as February 1 to August 31), a qualified wildlife biologist will conduct preconstruction surveys of all potential nesting habitat for birds within 500 feet of earthmoving activities.
- If active bird nests are found during preconstruction surveys, a 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged. A 250-foot buffer zone will be created around the nests of other special-status birds. These buffer zones are consistent with CDFG avoidance guidelines; however, they may be modified in coordination with CDFG based on existing conditions at work locations.
- If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs that have been determined to be unoccupied by special-status birds or that are located at least 500 feet from active nests may be removed.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Limit vegetation removal to non-breeding season (September 1 to January 31) 2. In the event that construction occurs during the breeding season (February 1 to August 31), conduct surveys of all potential nesting habitat within 500 feet of earthmoving activities. 3. In the event that active bird nests are found during preconstruction surveys, establish a 500 foot buffer around active nest sites. Establish a 250-foot buffer around other active special-status bird nests. 4. Remove trees, if necessary, that are not occupied by special-status birds.	1. Incorporate into contract specifications. 2. Incorporate survey results and recommendations into contract specifications. 3. Comply with CDFG guidelines. 4. Sign-off on inspection report and/ or MMRP.	1. Contractor 2. Qualified Biologist 3. Contractor 4. Contractor	1. During Construction 2. Prior to Construction 3. During Construction 4. During Construction	Member Agency

Impact 3.5.10: Impacts on Salt Marsh Harvest Mouse and Suisun Ornate Shrew

Construction of the proposed project has the potential to affect salt marsh harvest mouse and suisun ornate shrew and their habitat in and near the project alignments.

Mitigation Measure 3.5.10

The appropriate Member Agency shall implement protection measures to avoid and minimize impacts on salt marsh mammals during construction.

Where avoidance of sensitive habitat is not feasible (e.g., by bridging or bore and jack), consultation with CDFG and/or USFWS would be initiated. If species are present or presumed to be present after informal consultation with USFWS and/or CDFG, then a formal consultation and Biological Assessment in support of a Biological Opinion would be required. Such a consultation would proceed as part of the Corps 404 permitting program.

To avoid potential impacts on salt marsh harvest mouse and Suisun ornate shrew, a qualified biologist shall conduct specific preconstruction surveys prior to project initiation, following USFWS survey guidelines. The project proponent shall install exclusionary fences to prevent species movement into the project area, and a biologist with the appropriate permits to relocate these species shall live-trap mice and shrews within the enclosure and move these animals outside the fence. The biological monitor shall inspect these fences to ensure their integrity, and shall conduct an education workshop for contractors employees outlining species' biology, legislative protection, and construction restrictions to reduce potential impacts.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Consult with CDFG and/ or USFWS when avoidance of sensitive habitat is not feasible. 2. Conduct surveys for salt harvest mouse and Suisun ornate shrew. 3. Install exclusion fencing; conduct fence inspections. 4. Relocate species if necessary. 5. Conduct education workshops to inform construction personnel.	1. Compliance with recommendations and/ or Biological Assessment in support of a Biological Opinion. 2. Comply with USFWS guidelines; incorporate survey results and recommendations into contract specifications. 3. Comply with regulatory permit conditions; sign-off on inspection report and/ or MMRP. 4. Comply with regulatory permit conditions; sign-off on inspection report and/ or MMRP. 5. Incorporate into contract specifications; sign-off on inspection report and/or MMRP.	1. Member Agency/ Contractor 2. Qualified Biologist 3. Contractor/ Qualified Biologist 4. Qualified Biologist 5. Qualified Biologist/ Construction Personnel	1. Prior to Construction 2. Prior to Construction 3. During Construction 4. Prior to Construction 5. Prior to Construction	Member Agency

Impact 3.5.11: Impacts on Special-Status Bats

Construction of the proposed project has the potential to affect roosting or breeding special-status bats in and near the project alignments.

Mitigation Measure 3.5.11

The appropriate Member Agency shall implement protection measures to avoid and minimize impacts on special-status bats in and near project facilities during construction.

Concurrent with breeding bird surveys (**Mitigation Measure 3.5.8**), a qualified biologist will conduct preconstruction surveys for special-status bats at each bridge crossing location and in rural (i.e., non-road) areas where any large trees (e.g., > 24 inch diameter at breast height) will be removed. If an active roost is observed, a suitably-sized buffer (e.g., 100 to 150 feet) will be placed around the roost if it appears that trenching or other project activities may cause abandonment. Demolition activities must cease until juvenile bats are self-sufficient and will not be directly or indirectly impacted by activities.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.5.8. 2. Conduct species surveys at specified locations. 3. Establish 100-150-foot buffers around active roosts; cease demolition activities until juvenile bats are self-sufficient.	1. Summarize results and recommendations in daily log; sign-off on inspection report and/or MMRP. 2. Incorporate results and recommendations into contract specifications; sign-off on inspection report and/ MMRP. 3. Incorporate into contract specifications; sign-off on inspection report.	1. Qualified Biologist/ Contractor 2. Qualified Biologist 3. Contractor	1. Prior to and During Construction 2. Prior to construction 3. During Construction	Member Agency

Impact 3.5.12: Impacts on American Badger

Construction of the proposed project has the potential to affect American badger and its habitat in and near the project alignments.

Mitigation Measure 3.5.12

Mitigation Measure 3.5.12 would be implemented prior to ground-clearing activities to reduce potential impacts on badgers to a less-than-significant level.

Avoid and minimize impacts on badgers through preconstruction surveys prior to ground clearing and grading in annual grasslands habitat or areas that are known or suspected to support badger.

- Within 30-days prior to ground-clearing, a qualified biologist shall survey areas that provide potential badger habitat that occur within 100-feet of project activities. If no evidence of badgers presence is detected, no further mitigation is required. If active badger dens are identified within the project area, badgers will be passively relocated. If identified, vacated dens shall be temporarily covered using plywood sheets or similar materials to prevent badgers from returning to the project area during construction.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct species surveys to identify potential badger habitat with 100 feet of project site. 2. In the event that badger dens are identified, passively relocate badgers.	1. Incorporate survey results and recommendations into contract specifications. 2. Comply with biologist recommendations.	1. Qualified Biologist 2. Qualified Biologist	1. 30 days Prior to Construction 2. Prior to Construction.	Member Agency

Impact 3.5.13: Impacts on Rare Plants

Project construction could result in impacts to listed and other special-status plants.

Mitigation Measure 3.5.13

Before the initiation of any vegetation removal or ground-disturbing activities in areas that provide suitable habitat for special-status plants, the following measures shall be implemented:

- A qualified botanist will conduct appropriately-timed surveys for special-status plant species, including those identified in Table 3.5.1, in all suitable habitat that would be potentially disturbed by the project.

- Surveys shall be conducted following CDFG- or other approved protocol.

- If no special-status plants are found during focused surveys, the botanist shall document the findings in a letter to the appropriate agencies and no further mitigation will be required.

  If special-status plants are found during focused surveys, the following measures shall be implemented:

  - Information regarding the special-status plant population shall be reported to the CNDDB.

  - If the populations can be avoided during project implementation, they shall be clearly marked in the field by a qualified botanist and avoided during construction activities. Before ground clearing or ground disturbance, all on-site construction personnel shall be instructed as to the species' presence and the importance of avoiding impacts to this species and its habitat.

  - If special-status plant populations cannot be avoided, consultations with CDFG and/or USFWS would be required. A plan to compensate for the loss of special-status

plant species could be required, detailing appropriate replacement ratios, methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures that would be implemented if the initial mitigation fails; the plan would be developed in consultation with the appropriate agencies prior to the start of local construction activities.

- If mitigation is required, the project proponent shall maintain and monitor the mitigation area for 5 years following the completion of construction and restoration activities. Monitoring reports shall be submitted to the resource agencies at the completion of restoration and for 5 years following restoration implementation. Monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, and justification for any deviations from the mitigation plan.

Impact 3.5.14: Impacts on Heritage and Other Significant Trees

The proposed project could affect heritage and other significant tress.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct plant surveys. 2. Implement measures if special-status plants are present. 3. Mark special status plants and inform construction personnel of their presence. 4. Consult with CDFG and/or USFWS if special-status plants cannot be avoided. 5. If compensatory mitigation is required, monitor mitigation area.	1. Comply with CDFG protocol. Incorporate results and recommendations into contract specifications. In the event that no special-status plants are present, document findings in a letter to the appropriate resources agency. 2. Report information regarding present special-status plants to CNDDB. 3. Sign-off on inspection report and/or MMRP. 4. Coordination with CDFG and or USFWS; compliance with recommendations; development of a compensation plan. 5. Submit annual monitoring reports to resource agencies that include photo documentation, planting specifications, site layout map.	1. Qualified Botanist 2. Qualified Botanist 3. Qualified Botanist 4. Member Agency 5. Member Agency	1. Prior to Construction 2. During Construction 3. Prior to Construction 4. Prior to Construction 5. 5 Years Following Construction	Member Agency

Mitigation Measure 3.5.14

The following measures will be implemented to avoid or reduce impacts to heritage or other significant trees:

1. Prior to the commencement of construction activities, trees necessary to remove or at risk of being damaged will be identified.

2. A certified arborist will inventory these trees, with the results of the inventory providing species, size (diameter at breast height, or *dbh*), and number of protected trees. Also, in consultation with the appropriate County, the arborist will determine if any are heritage or landmark trees.

3. If any protected trees are identified that will be potentially removed or damaged by construction of the proposed project, design changes will be implemented where feasible to avoid the impact.

4. Any protected trees that are removed will be replaced per applicable City and County tree protection ordinances. Foliage protectors (cages and tree shelters) will be installed to protect the planted trees from wildlife browse. The planted trees will be monitored as required by the ordinance, or regularly during a minimum two-year establishment period and maintenance during the plant establishment period will include irrigation. After the establishment period, the native tree plantings are typically capable of survival and growth without supplemental irrigation.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Identify trees at risk or trees to be removed. 2. Inventory trees. 3. Consult with counties to determine if any identified trees are landmark trees. 4. Replace removed trees. 5. Monitor replacement trees.	1. Incorporate recommendations into contract specifications. 2. Record results in inspection report. 3. Record results in inspection report. 4. Comply with City and County Tree ordinances. 5. Comply with City and County Tree ordinances; sign-off on inspection report/ and or MMRP.	1. Certified Arborist/ Contractor 2. Certified Arborist 3. Member Agency 4. Member Agency 5. Member Agency/ Certified Arborist	1. Prior to Construction 2. Prior to Construction 3. Prior to Construction 4. After Construction is Completed 5. Minimum of two years following completion of construction	Member Agency

Land Use and Agricultural Resources

Impact 3.6.3: Impact to Farmland

Construction activities associated with the project could temporarily affect the agricultural use of important farmland.

Mitigation Measure 3.6.1

To support the continued productive use of Important Farmlands in the project area, the appropriate Member Agency shall ensure that the following measures are taken, during construction of the project:

- Replace soils over pipelines in a manner that will minimize any negative impacts on crop productivity. The surface and subsurface soil layers will be stockpiled separately and returned to their appropriate locations in the soil profile.

- To avoid over-compaction of the top layers of soil, monitor pre-construction soil densities and return the surface soil (approximately the top 3 feet) to within 5 percent of original density.

- Where necessary, the top soil layers will be ripped to achieve the appropriate soil density. Ripping may also be used in areas where vehicle and equipment traffic have compacted the top soil layers, such as the construction staging areas.

- Avoid working or traveling on wet soil to minimize compaction and loss of soil structure. Before construction begins, geotechnical testing will be done to determine the moisture content limit above which work should not occur. Where working or driving on wet soil cannot be avoided, roadways will be capped with spoils that will be removed at the end of construction and/or ripped and amended with organic material as needed.

- Remove all construction-related debris from the soil surface. This will prevent rock, gravel, and construction debris from interfering with agricultural activities.

- Perform soil density monitoring during backfill and ripping to minimize excessive compaction and minimize effects on future agricultural land use.

- Remove topsoil before excavating in fields. Return it to top of fields to avoid detrimental inversion of soil profiles.

- Control compaction to minimize changes to lateral groundwater flow which could affect both irrigation and internal drainage.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Replace soils over pipelines in a manner that will minimize any negative impacts on crop productivity. Stockpile surface and subsurface soil layers separately and return them to their appropriate locations in the soil profile. 2. Monitor pre-construction soil densities and return the surface soil (approximately the top 3 feet) to within 5 percent of original density. 3. Where necessary, rip the top soil layers to achieve the appropriate soil density. 4. Conduct geotechnical testing to determine the moisture content limit above which work should not occur. Where working or driving on wet soil cannot be avoided, roadways will be capped with spoils that will be removed at the end of construction and/or ripped and amended with organic material as needed. 5. Remove all construction-related debris from the soil surface. 6. Perform soil density monitoring during backfill and ripping. 7. Remove topsoil before excavating in fields. Return it to top of fields to avoid detrimental inversion of soil profiles. 8. Control compaction to minimize changes to lateral groundwater flow.	1. Incorporate procedure into construction specifications. 2. Incorporate procedure into construction specifications. 3. Incorporate procedure into construction specifications. 4. Incorporate procedure into construction specifications. 5. Incorporate procedure into construction specifications. 6. Incorporate procedure into construction specifications. 7. Incorporate procedure into construction specifications. 8. Incorporate procedure into construction specifications.	1. Contractor/ Member Agency 2. Member Agency 3. Member Agency 4. Member Agency 5. Member Agency 6. Member Agency 7. Member Agency 8. Member Agency	1. Prior to Construction/ During Construction 2. Prior to Construction/ During Construction 3. Prior to Construction/ During Construction 4. Prior to Construction/ During Construction 5. Prior to Construction/ During Construction 6. Prior to Construction/ During Construction 7. Prior to Construction/ During Construction 8. Prior to Construction/ During Construction	Member Agency

Transportation and Traffic

Impact 3.7.1: Temporary Congestion and Delays

Project construction activities could adversely affect traffic and transportation conditions in the project area.

Mitigation Measure 3.7.1a

The appropriate Member Agency for each project component shall obtain and comply with local road encroachment permits for roads that are affected by construction activities.

The *Work Area Protection and Traffic Control Manual* includes requirements to ensure safe maintenance of traffic flow through or around the construction work zone, and safe access of police, fire, and other rescue vehicles (CJUTCC, 1996). In addition, the Traffic Management Plan (subject to local jurisdiction review and approval) required by **Mitigation Measure 3.7.1b**, below, would direct how traffic flow is safely maintained during project construction.

Mitigation Measure 3.7.1b

The construction contractor for each project component shall prepare and implement a Traffic Control/Traffic Management Plan subject to approval by the appropriate local jurisdiction prior to construction. The plan shall:

- Identify hours of construction (between 8:00 AM and 7:00 PM; no construction shall be permitted between 10:00 PM and 7:00 AM);
- Identify hours for deliveries (Monday – Friday, 9:00 AM to 3:30 PM, or other hours if approved by the appropriate local jurisdiction);
- Include a discussion of haul routes, limits on the length of open trench, work area delineation, traffic control and flagging;
- Identify all access and parking restriction, pavement markings and signage requirements (e.g., speed limit, temporary loading zones);
- Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints;
- Include a plan to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times;

- Include a plan to coordinate all construction activities with the appropriate local school district at least two months in advance. The school district shall be notified of the timing, location, and duration of construction activities. Coordinate with the appropriate local school district to identify peak circulation periods at schools along the alignment(s) (i.e., the arrival and departure of students), and require their contractor to avoid construction and lane closures during those periods. The construction contractor for each project component shall be required to maintain vehicle, pedestrian, and school bus service during construction through inclusion of such provisions in the construction contract. The assignment of temporary crossing guards at designated intersections may be needed to enhance pedestrian safety during project construction;

- Include the requirement that all open trenches be covered with metal plates at the end of each workday to accommodate traffic and access; and

- Specify the street restoration requirements pursuant to agreements with the local jurisdictions.

Mitigation Measure 3.7.1c

The appropriate Member Agency for each project component shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) will be used to minimize impacts to traffic flow.

Mitigation Measure 3.7.1d

The appropriate Member Agency for each project component shall develop circulation and detour plans to minimize impact to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.

Mitigation Measure 3.7.1e

The appropriate Member Agency for each project component shall encourage construction crews to park at staging areas to limit lane closures in the public right-of-way.

Mitigation Measure 3.7.1f

The appropriate Member Agency for each project component shall consult with the appropriate public transit service providers at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Obtain local road encroachment permits for roads that are affected by construction activities.	1. Incorporate permit regulations into contract specifications.	1. Member Agency 2. Member Agency 3. Member Agency 4. Contractor/ Member Agency	1. Prior to Construction 2. Prior to and During Construction	Member Agency

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
2. Implement a traffic control plan which includes the following measures such as identifying hours of construction and deliveries; identifying access and parking restriction, pavement markings and signage requirements; and planning for notifications; coordinating all construction activities with emergency service providers; 3. Identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) will be used to minimize impacts to traffic flow. 4. Develop circulation and detour plans to minimize impact to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone. 5. Encourage construction crews to park at staging areas to limit lane closures in the public right-of-way. 6. Consult with the appropriate public transit service providers at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.	2. Incorporate traffic control plan measures into contract specifications. 3. Incorporate techniques into contract specifications. 4. Incorporate plans into contract specifications. 5. Incorporate parking restrictions into contract specifications. 6. Incorporate transit service notification into contract specifications.	5. Member Agency 6. Contractor	3. Prior to and During Construction 4. Prior to and During Construction 5. During Construction 6. Prior to Construction	

Impact 3.7.2: Temporary Disruption to Access

Project construction activity would temporarily disrupt circulation patterns near sensitive land uses (schools, hospitals, fire stations, police stations, and other emergency providers).

Mitigation Measure 3.7.2a

Pipeline construction near schools shall occur when school is not in session (i.e., summer or holiday breaks). If this is not feasible, a minimum of two months prior to project construction, the appropriate Member Agency for each project component shall coordinate with the appropriate local school district to identify peak circulation periods at schools along the alignment(s) (i.e., the arrival and departure of students), and require their contractor to avoid construction and lane closures during those periods.

Mitigation Measure 3.7.2b

A minimum of two months prior to project construction, the appropriate Member Agency for each project component shall coordinate with the appropriate local school district to identify alternatives to their Safe Routes to School program, alternatives for the school busing routes and stop locations, and other circulation provisions, as part of the Traffic Control/Traffic Management Plan (see **Mitigation Measure 3.7.1a**).

Mitigation Measure 3.7.2c

Implement **Mitigation Measure 3.7.1b**.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Restrict pipeline construction near schools to times when school is not in session (i.e., summer or holiday breaks). If this is not feasible, coordinate with the appropriate local school district a minimum of two months prior to project construction to identify peak circulation periods at schools along the alignment(s) (i.e., the arrival and departure of students), and require the contractor to avoid construction and lane closures during those periods.	1. Incorporate restrictions for schools into construction schedule and construction specifications.	1. Member Agency	1. Prior to and During Construction	Member Agency

Impact 3.7.3: Temporary Disruption to Access

Project construction activity would have temporary effects on alternative transportation or alternative transportation facilities.

Mitigation Measure 3.7.3

Implement **Mitigation Measure 3.7.1f**.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.7.1f.	1. Incorporate transit service notification into contract specifications.	1. Member Agency	1. Prior to Construction	Member Agency

Impact 3.7.4: Temporary Displacement of Parking

Project construction activity would temporarily create parking demand for construction workers and construction vehicles, and displace parking spaces.

Mitigation Measure 3.7.4

Implement **Mitigation Measure 3.7.1e**.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.7.1e.	1. Incorporate parking restrictions into contract specifications.	1. Contractor	1. During Construction	Member Agency

Impact 3.7.5: Temporary Potential Traffic Hazards

Project construction activity would temporarily increase the potential for accidents on project roadways.

Mitigation Measure 3.7.5

Implement **Mitigation Measure 3.7.1b** through **3.7.1f**.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.7.1b. 2. Implement Mitigation Measure 3.7.1c. 3. Implement Mitigation Measure 3.7.1d. 4. Implement Mitigation Measure 3.7.1e. 5. Implement Mitigation Measure 3.7.1f.	1. Incorporate traffic control plan measures into contract specifications. 2. Incorporate techniques into contract specifications 3. Incorporate plans into contract specifications. 4. Incorporate parking restrictions into contract specifications. 5. Incorporate transit service notification into contract specifications.	1. Member Agency 2. Contractor/ Member Agency 3. Member Agency 4. Contractor 5. Member Agency	1. Prior to and During Construction 2. Prior to and During Construction 3. Prior to and During Construction 4. During Construction 5. Prior to Construction	Member Agency

Impact 3.7.6: Road Wear

Project construction activity would increase wear and tear on the designated haul routes used by construction vehicles to access the project work sites.

Mitigation Measure 3.7.6

Roads damaged by construction shall be repaired to a structural condition equal to that which existed prior to construction activity as per conditions of the encroachment permit (see **Mitigation Measure 3.7.1a**).

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Obtain local road encroachment permits for roads that are affected by construction activities.	1. Incorporate permit regulations into contract specifications.	1. Member Agency	1. Prior to Construction	Member Agency

Air Quality

Impact 3.8.1: Temporary Construction Emissions of Criteria Pollutants

Project construction activities could result in substantial short-term criteria pollutant emissions.

Mitigation Measure 3.8.1a: Construction Fugitive Dust Control Plan

The appropriate Member Agency shall require its contractor(s) to implement a dust control plan that shall include the following dust control procedures during construction as required by the BAAQMD:

- Water all active construction areas at least twice daily, taking into consideration temperature and wind conditions.
- Cover all trucks hauling soil, sand, and other loose materials *or* require trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways, consistent with **Mitigation Measure 3.1.2**, Erosion Control.
- Replant vegetation in disturbed areas as quickly as possible.

Mitigation Measure 3.8.1b: Construction Exhaust Emissions Control Plan

The appropriate Member Agency shall require its contractor(s) to implement an exhaust emissions control plan that shall include the following controls and practices:

- On road vehicles with a gross vehicular weight rating of 10,000 pounds or greater shall not idle for longer than five minutes at any location as required by Section 2485 of Title 13,

Division 3, Chapter 10, Article 1 of the California Code of Regulations. This restriction does not apply when vehicles remain motionless during traffic or when vehicles are queuing.

- Off road equipment engines shall not idle for longer than five minutes per Section 2449(d)(3) of Title 13, Division 3, Chapter 9, Article 4.8 of the California Code of Regulations. All vehicle operators shall receive a written idling policy to inform them of idling restrictions. The policy shall list exceptions to this rule that include the following: idling when queuing; idling to verify that the vehicle is in safe operating condition; idling for testing, servicing, repairing or diagnostic purposes; idling necessary to accomplish work for which the vehicle was designed (such as operating a crane); idling required to bring the machine to operating temperature as specified by the manufacturer; and idling necessary to ensure safe operation of the vehicle.

- Off road engines greater than 50 horsepower shall, at a minimum, meet Tier 2 emissions standards. When available, higher Tier engines shall be utilized.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement BAAQMD Basic Dust Control Measures. 2. Include exhaust controls in contractor specifications. 3. Implement exhaust control measures.	1. Incorporate in contract specifications and Sign-off on inspection report and/ or MMRP that measures are being implemented. 2. Review contract specifications. 3. Sign-off on inspection report and/ or MMRP.	1. Contractor 2. Contractor 3. Contractor	1. During Construction 2. Design and prior to construction 3. During Construction	Member Agency

Impact 3.8.4: Long term Increase in GHG Emissions

Project construction and operation would increase GHG emissions potentially interfering with the State's GHG reduction goals.

Mitigation Measure 3.8.1b: Construction Exhaust Emissions Control Plan

(see p. 3.8-22 above).

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.8.1b.	1. Review contract specifications.	1. Contractor	1. Design and During Construction	Member Agency

Noise

Impact 3.9.1: Temporary construction noise

Construction activity would violate standards established in the local general plans or noise ordinances, and/or would adversely affect nearby sensitive receptors.

Mitigation Measure 3.9.1

The appropriate Member Agency shall develop and implement a Construction Noise Reduction Plan that requires, at a minimum, the following:

- The contractor shall locate all stationary noise-generating equipment, including hammer bore and drill rigs, as far as possible from nearby noise-sensitive receptors. Stationary noise sources located within 500 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings, and the line of sight between such sources and nearby sensitive receptors shall be blocked by portable acoustic barriers.

- The contractor shall assure that construction equipment with internal combustion engines have sound control devices at least as effective as those provided by the original equipment manufacturer. No equipment shall be permitted to have an un-muffled exhaust.

- All construction activities within unincorporated Sonoma County shall be limited to between the hours of 7 a.m. and 6 p.m. on weekdays and between 9 a.m. and 5 p.m. on Saturdays.

- Residences and other sensitive receptors within 200 feet of a construction area shall be notified of the construction schedule in writing, at least two weeks prior to the commencement of construction activities. This notice shall indicate the allowable hours of construction activities as specified by the applicable local jurisdiction or as defined by this mitigation measure. The construction contractor shall designate a noise disturbance coordinator who would be responsible for responding to complaints regarding construction noise. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. A contact number for the noise disturbance coordinator shall be conspicuously placed on construction site fences and entrances and included in the construction schedule notification sent to nearby residences and sensitive receptors.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Develop and Implement Construction Noise Reduction Plan. 2. Appropriately locate all stationary noise-generating equipment. 3. Use appropriate equipment.	1. Incorporate into contract specifications; sign-of on inspection report and/or MMRP. 2. Incorporate into contract specifications; sign-of on inspection report and/or MMRP.	1. Contractor 2. Contractor 3. Contractor 4. Contractor 5. Contractor 6. Contractor	1. Prior to and During Construction 2. During Construction 3. During Construction 4. During Construction	Member Agency

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
4. Limit construction activities to specified work hours. 5. Notify sensitive receptors of construction schedule. 6. Designate a noise disturbance coordinator.	3. Incorporate into contract specifications; sign-of on inspection report and/or MMRP. 4. Sign-of on inspection report and/or MMRP. 5. Sign-of on inspection report and/or MMRP. 6. Incorporate into contract specifications; sign-of on inspection report and/or MMRP.		5. At least two weeks Prior to Construction 6. Prior to Construction	

Impact 3.9.2: Temporary vibration impacts

Construction activities could expose sensitive receptors to excessive ground-borne vibration levels.

Mitigation Measure 3.9.2

The appropriate Member Agency will implement the following measure:

> The construction contractor shall use a trenchless technology (e.g., horizontal directional drill, lateral drilling, etc.) other than jack and bore when there are structures within 100 feet of the proposed activities. If the construction contractor provides the Member Agency with acceptable documentation indicating that alternative trenchless technology is not feasible for the crossing, the contractor shall develop and implement a Construction Vibration Mitigation Plan to minimize construction vibration damage using all reasonable and feasible means available, including siting the jack and bore as far a possible from all nearby structures. The plan shall provide a procedure for establishing thresholds and limiting vibration values for potentially affected structures based on an assessment of each structure's ability to withstand the loads and displacements due to construction vibrations. The plan should also include the development of a vibration monitoring plan to be implemented during construction of particular crossing.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement trenchless technology, when appropriate. 2. Develop a Construction Vibration Mitigation Plan in the event that trenchless technology is not feasible.	1. Incorporate into contract specifications. 2. Incorporate into contract specifications.	1. Contractor 2. Contractor	1. During Construction 2. Prior to and During Construction	Member Agency

Impact 3.9.3: Permanent Increases to Ambient Noise Levels

Operational activities could permanently generate noise levels above existing ambient levels in the vicinity of sensitive receptor locations.

Mitigation Measure 3.9.3

The appropriate Member Agency shall implement the following measure:

> All new pump stations shall be located within enclosed structures with adequate setback and screening to achieve acceptable regulatory noise standards for industrial uses as well as to achieve acceptable levels at the property lines of nearby residences, as determine by the applicable local jurisdiction. Noise enclosures shall be designed to reduce equipment noise levels by at least 20 dBA.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Enclose pump stations with screens.	1. Incorporate into construction specifications; Sign-off inspection report and/or MMRP.	1. Contractor/ Member Agency	1. Design and Prior to Construction	Member Agency

Hazards and Hazardous Materials

Impact 3.10.1: Exposure to Hazardous Materials

Project construction could expose workers and the public to hazardous materials that could be present in the soil or shallow groundwater encountered during excavation.

Mitigation Measure 3.10.1a

Project contract specifications shall require that, in the event that evidence of potential soil contamination such as soil discoloration, noxious odors, debris, or buried storage containers, is encountered during construction, the contractor will have a contingency plan for sampling and analysis of potentially hazardous substances, including use of a photoionization detector. The required handling, storage, and disposal methods shall depend on the types and concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws and will coordinate with the appropriate regulatory agencies,

Mitigation Measure 3.10.1b

If unknown USTs are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements governing UST removal.

Mitigation Measure 3.10.1c

Prepare a project-specific Health and Safety Plan that would apply to excavation activities. The plan shall establish policies and procedures to protect workers and the public from potential hazards posed by hazardous materials. The plan shall be prepared according to federal and California OSHA regulations and submitted to the appropriate agency with jurisdiction prior to beginning site activities.

Mitigation Measure 3.10.1d

Project contract specifications shall include a Dust Abatement Program to minimize potential public health impacts associated with exposure to contaminants in soil dust.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Require that in the event that evidence of potential soil contamination such as soil discoloration, noxious odors, debris, or buried storage containers, is encountered during construction, the contractor will have a contingency plan for sampling and analysis of potentially hazardous substances, including use of a photoionization detector. Any site investigations or remediation shall comply with applicable laws and will coordinate with the appropriate regulatory agencies. 2. Remove USTs, associated piping, and any impacted soil discovered during construction. 3. Prepare a project-specific Health and Safety Plan that would apply to excavation activities. The plan shall be prepared according to federal and California OSHA regulations and submitted to the appropriate agency with jurisdiction prior to beginning site activities. 4. Implement a Dust Abatement Program.	1. Incorporate requirement into construction specifications. 2. Incorporate requirement into construction specifications; Comply with applicable county and state requirements governing UST removal. 3. Incorporate plan requirements into construction specifications. 4. Incorporate program requirements into construction specifications.	1. Contractor/ Member Agency 2. Licensed UST Removal Contractor/ Member Agency 3. Member Agency 4. Member Agency	1. During Construction 2. During Construction 3. Prior to and During Construction 4. Prior to and During Construction	Member Agency

Impact 3.10.2: Release of Hazardous Materials During Construction

Project construction could increase the potential for accidental release of hazardous materials.

Mitigation Measure 3.10.2a

Consistent with the SWPPP requirements, the construction contractor shall be required to implement BMPs for handling hazardous materials onsite. The use of construction BMPs will minimize any adverse effects on groundwater and soils, and will include, but not limited to, the following:

- Follow manufacturers' recommendations and regulatory requirements for use, storage, and disposal of chemical products and hazardous materials used in construction;
- Spill control and countermeasures, including employee spill prevention/response training;
- Avoid overtopping construction equipment fuel gas tanks;
- During routine maintenance of construction equipment, properly contain and remove grease and oils; and
- Properly dispose of discarded containers of fuels and other chemicals.

Mitigation Measure 3.10.2b

The contractor shall follow the provisions of California Code of Regulations, Title 8, Sections 5163 through 5167 for General Industry Safety Orders to protect the project area from being contaminated by the accidental release of any hazardous materials and/or wastes. The local CUPA agency will be contacted for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling.

Mitigation Measure 3.10.2c

Oil and other solvents used during maintenance of construction equipment shall be recycled or disposed of in accordance with applicable regulatory requirements. All hazardous materials shall be transported handled, and disposed of in accordance with applicable regulatory requirements.

Mitigation Measure 3.10.2d

In the event of an accidental release of hazardous materials during construction, containment and clean up shall occur in accordance with applicable regulatory requirements.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement BMPs for handling hazardous materials onsite. 2. Protect the project area from being contaminated by the accidental release of any hazardous materials and/or wastes. Contact the local CUPA agency for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling. 3. Recycle or dispose of oil and other solvents used during maintenance of construction equipment in accordance with applicable regulatory requirements. 4. Contain and clean up accidental releases of hazardous materials.	1. Incorporate BMPs into construction specifications; sign-off on inspection report and/or MMRP. 2. Incorporate provisions into the construction specifications. Comply with the provisions of California Code of Regulations, Title 8, Sections 5163 through 5167 for General Industry Safety Orders. Coordinate with CUPA agency and comply with their recommendations. 3. Incorporate requirement into construction specifications; Comply with regulatory requirements. 4. Incorporate requirement into construction specifications; Comply with regulatory requirements.	1. Contractor/ Member Agency 2. Member Agency 3. Member Agency 4. Member Agency	1. During Construction 2. Prior to construction 3. During construction 4. During Construction	Member Agency

Impact 3.10.4: Wildland Fire Hazard

Construction activities in grassland areas could have the potential to expose people or equipment to risk of loss, injury, or death involving wildland fires.

Mitigation Measure 3.10.4a

For applicable Member Agencies, in consultation with local fire agencies, a Fire Safety Plan will be developed for each of the service areas associated with the project. The Fire Safety Plan(s) will describe various potential scenarios and action plans in the event of a fire.

Mitigation Measure 3.10.4b

For applicable Member Agencies, during project construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall

be equipped with a spark arrestor in good working order. All vehicles and crews working at the project site(s) will have access to functional fire extinguishers at all times. In addition, construction crews will be required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Develop Fire Safety Plan. 2. Clear all staging areas, welding areas, or areas slated for development using spark-producing equipment of dried vegetation or other material that could ignite. Equip construction equipment a spark arrestor in good working order. All vehicles and crews working at the project site(s) will have access to functional fire extinguishers at all times. Require construction crews to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.	1. Incorporate Fire Safety Plan into construction specifications. 2. Incorporate measures into construction specifications; sign-off on inspection report and/or MMRP.	1. Member Agency 2. Contractor/ Member Agency	1. Prior to Construction 2. During Construction	Member Agency

Public Services and Utilities

Impact 3.11.1: Temporary Effect on Response Times for Emergency Service Providers

Project construction activities could temporarily affect response times for emergency service providers.

Mitigation Measure 3.11.1

The Member Agencies will coordinate with local emergency service providers in its service area to inform them of the proposed construction activities and schedule, and provide temporary alternate access routes around construction areas as necessary.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Coordinate with local emergency providers to inform them of the proposed construction activities and schedule. 2. Provide alternate routes for emergency service providers around construction areas as necessary.	1. Incorporate into contract specifications 2. Sign-off on inspection report and/or MMRP	1. Member Agency/ Contractor 2. Contractor	1. Prior to construction 2. During Construction	Member Agency

Impact 3.11.2: Short-term Police and Fire Assistance

Project construction activities could require short-term police and fire protection services to assist in traffic management or in the event of an accident.

Mitigation Measure 3.11.2

Public service providers shall provide, upon request, a copy of the Traffic Control Plan to the related police and fire agencies for their review prior to construction. The appropriate Member Agency shall provide 72-hour notice to the local service providers prior to construction of individual pipeline segments. Discussion on the Traffic Control Plan is provided in Section 3.7, Traffic and Circulation.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Provide Traffic Control Plan to local emergency service providers for review. 2. Provide notice to local fire and police agencies to notify them of construction of individual segments of pipeline.	1. Sign-off on inspection report and/or MMRP. 2. Sign-off on inspection report and/or MMRP.	1. Contractor 2. Member Agency/ Contractor	1. Prior to Construction 2. 72 hours Prior to Construction at each site.	Member Agency

Impact 3.11.3: Temporary Accidental Disruption to Utility Services

Project construction could result in temporary planned or accidental disruption to utility services.

Mitigation Measure 3.11.3

The Member Agencies will identify utilities along the proposed pipeline routes and project sites prior to construction and implement the following measures:

a. Utility excavation or encroachment permits shall be obtained as required from the appropriate agencies. These permits include measures to minimize utility disruption. The service provider and its contractors shall comply with permit conditions regarding utility disruption.

b. Utility locations shall be verified through the use of the Underground Service Alert services and/or field survey (potholing).

c. As necessary, detailed specifications shall be prepared as part of the design plans to include procedures for the excavation, support, and fill of areas around utility cables and pipes. All affected utility services shall be notified of construction plans and schedule. Arrangements shall be made with these entities regarding protection, relocation, or temporary disconnection of services.

d. In areas where the pipeline would traverse parallel to underground utility lines within five feet, the project applicant shall employ special construction techniques, such as trench wall-support measures to guard against trench wall failure and possible resulting loss of structural support for the excavated areas.

e. Residents and businesses in the project corridor shall be notified of any planned utility service disruption two to four days in advance, in conformance with county and state standards.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Acquire utility excavation or encroachment permits. 2. Verify utility locations using Underground Service Alert services and/or field survey. 3. Include procedures for excavation, support, and fill of areas around utility cables and pipes. 4. Coordinate with affected local utility services to notify them of the proposed construction activities and schedule. 5. Implement special construction techniques, as needed. 6. Notify residents and businesses in advance to inform them of proposed construction activities and schedule.	1. Comply with regulatory permit, Copies of approved permits will be available onsite. 2. Incorporate into contract specifications. 3. Incorporate in design and contract specifications 4. Incorporate into contract specifications; sign-off on inspection report and/or MMRP 5. Sign-off on inspection report and/or MMRP 6. Sign-off on inspection report and/or MMRP	1. Contractor/ Member Agency 2. Contactor 3. Contractor 4. Contractor/ Member Agency 5. Contractor 6. Contractor/ Member Agency	1. Prior to Construction 2. Prior to Construction 3. Prior to Construction 4. Prior to Construction 5. During Construction 6. Prior to Construction	Member Agency

Cultural Resources

Impact 3.12.1: Impact to Cultural Resources/Archaeological Sites

Project construction could affect existing cultural resources or uncover unknown and/or buried archaeological materials in areas of high prehistoric archaeological sensitivity.

Mitigation Measure 3.12.1

The appropriate Member Agency will incorporate the following measures:

> **Mitigation Measure 3.12.1a: Prepare a Cultural Resources Monitoring Plan.** Prior to authorization to proceed, or issuance of permits, the applicant shall prepare and submit a cultural resources monitoring plan to the appropriate jurisdiction for review and approval. Monitoring shall be required for all surface alteration and subsurface excavation work including trenching, boring, grading, use of staging areas and access roads, and driving vehicles and equipment within all areas delineated as sensitive for cultural resources. A qualified professional archaeologist (cultural resources monitor) that is approved by each Member Agency in consultation with all affected jurisdictions shall prepare the plan. The plan shall address (but not be limited to) the following issues:
>
> - Training program for all construction and field workers involved in site disturbance;
> - Person(s) responsible for conducting monitoring activities, including Native American monitors;
> - How the monitoring shall be conducted and the required format and content of monitoring reports, including any necessary archaeological re-survey of the final pipeline alignment (including the need to conduct shovel-test units or auger samples to identify deposits in advance of construction), assessment, designation and mapping of the sensitive cultural resource areas on final project maps, assessment and survey of any previously unsurveyed areas;
> - Person(s) responsible for overseeing and directing the monitors;
> - Schedule for submittal of monitoring reports and person(s) responsible for review and approval of monitoring reports;
> - Procedures and construction methods to avoid sensitive cultural resource areas (i.e. boring conduit underneath recorded or discovered cultural resource site);
> - Clear delineation and fencing of sensitive cultural resource areas requiring monitoring;
> - Physical monitoring boundaries (e.g., 200-foot radius of a known site);
> - Protocol for notifications in case of encountering of cultural resources, as well as methods of dealing with the encountered resources (e.g., collection, identification, curation);

- Methods to ensure security of cultural resources sites;

- Protocol for notifying local authorities (i.e. Sheriff, Police) should site looting and other illegal activities occur during construction.

Mitigation Measure 3.12.1b: Archaeological and Native American Monitoring. If an intact archaeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit shall cease until the deposit is evaluated. The appropriate Member Agency, as necessary, shall retain the services of a Native American monitor and a qualified archaeological consultant that has expertise in California prehistory to monitor ground-disturbing within areas designated as being sensitive for buried cultural resources. The archaeological monitor shall immediately notify the appropriate Member Agency of the encountered archaeological deposit. The monitors shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to NBWRA and the appropriate Member Agency. During the course of the monitoring, the archaeologist may adjust the frequency—from continuous to intermittent—of the monitoring based on the conditions and professional judgment regarding the potential to impact resources.

If a Member Agency, in consultation with the monitors, determines that a significant archaeological resource is present within their jurisdiction and that the resource could be adversely affected by the NBWRP, the Member Agency shall:

- Re-design the NBWRP to avoid any adverse effect on the significant archaeological resource; *or*,

- Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archaeological data recovery program, an ADRP shall be conducted. The project archaeologist and the Member Agency shall meet and consult to determine the scope of the ADRP. The archaeologist shall prepare a draft ADRP that shall be submitted to the appropriate Member Agency for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ADRP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, shall be limited to the portions of the historic property that could be adversely affected by NBWRP. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical.

Mitigation Measure 3.12.1c: Cultural Resources Assessment for Staging Areas

When locations for staging are defined the areas of potential effect should be subject to a cultural resources investigation that includes, at a minimum:

- An updated records search at the Northwest Information Center;

- An intensive survey of all areas within the lots;
- A report disseminating the results of this research; and,
- Recommendations for additional cultural resources work necessary to mitigate any adverse impacts to recorded and/or undiscovered cultural resources.

Mitigation Measure 3.12.1d: Inadvertent Discoveries

If discovery is made of items of historical or archaeological interest, the contractor shall immediately cease all work activities in the area (within approximately 100 feet) of discovery. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation the contractor shall immediately contact the NBWRA and appropriate Member Agency. The contractor shall not resume work until authorization is received from the appropriate Member Agency.

- In the event of unanticipated discovery of archaeological indicators during construction, the Member Agency shall retain the services of a qualified professional archaeologist to evaluate the significance of the items prior to resuming any activities that could impact the site.
- In the case of an unanticipated archaeological discovery, if it is determined that the find is unique under NHPA and/or potentially eligible for listing in the National Register, and the site cannot be avoided, appropriate Member Agency shall provide a research design and excavation plan, prepared by an archaeologist, outlining recovery of the resource, analysis, and reporting of the find. The research design and excavation plan shall be submitted to NBWRA and appropriate Member Agency and approved by the appropriate Member Agency prior to construction being resumed.

Mitigation Measure 3.12.1e: Project-level Cultural Resources Assessment

When project-level plans are completed for the Basic System; the Partially Connected System; and the Fully Connected System, NBWRA the appropriate Member Agency will conduct a cultural resources investigation for the APE that includes, at a minimum:

- An updated records search at the NWIC;
- An intensive cultural resources survey of the APE;
- A report disseminating the results of this research; and,
- Recommendations for additional cultural resources work necessary to mitigate any adverse impacts to recorded and/or undiscovered cultural resources.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Prepare Cultural Resources Monitoring Plan. 2. Monitor predetermined culturally sensitive areas; cease work if cultural artifacts or humans remains are discovered. 3. Conduct cultural resources investigation for staging areas. 4. Cease work within 100 feet of a find and inform the appropriate Member Agency in the event of an inadvertent discovery of cultural resources. 5. Conduct a project-level Cultural Resources Assessment for program-level areas.	1. Incorporate into contract specifications. 2. Incorporate into contract specifications, and make recommendations for design modification if necessary. 3. Incorporate into contract specifications. 4. Copies of DPR 422 or 523 shall be retained in Member Agency files; incorporate recommendations for design modification if necessary. 5. Incorporate into contract specifications, and make recommendations for design modification if necessary.	1. Qualified Archaeologist 2. Qualified Archaeologist and Native American Monitor 3. Qualified Archaeologist 4. Contractor/ Member Agency 5. Qualified Archaeologist	1. Prior to Construction 2. During Construction 3. Prior to Construction 4. During Construction 5. Following Project Design; Prior to Construction	Member Agency

Impact 3.12.2: Discovery of Human Remains

Project construction could result in damage to previously unidentified human remains.

Mitigation Measure 3.12.2: Discovery of Human Remains

If potential human remains are encountered, the appropriate Member Agency shall halt work in the vicinity of the find and contact the county coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the coroner determines the remains are Native American, the coroner shall contact the NAHC. As provided in Public Resources Code Section 5097.98, the NAHC shall identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendent makes recommendations for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. In the event of discovery of human remains, cease work and contact county coroner and NAHC if necessary.	1. Sign-off on inspection report and/ or MMRP; coordinate with NAHC.	1. Contractor/ Member Agency	1. During Construction	Member Agency

Recreation

Impact 3.13.1: Temporary Disturbance

Project construction could result in short-term disturbance adjacent to recreational facilities.

Mitigation Measure 3.13.1a

The appropriate Member Agency shall coordinate with the appropriate local and regional agencies to identify detour routes for the bikeways and trails during construction where feasible, as part of the Traffic Control/Traffic Management Plan (see **Measure 3.11.1a**).

Mitigation Measure 3.13.1b

Implement Mitigation Measures 3.8-1a through 3.8.1b, and Mitigation Measures 3.9-1 through 3.9-3.

Mitigation Measure 3.13.2

Before beginning construction, the contractor will develop, in consultation with the appropriate representative(s) of the affected park's managing agency, a plan indicating how public access to the park will be maintained during construction. If needed, flaggers will be stationed near the construction activity area to direct and assist members of the public around the activity areas while maintaining access to the parks.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Identify and establish detours for disrupted bikeways and trails. 2. Maintain public access; station flaggers to assist in directing public. 3. Implement Mitigation Measure 3.8.1a. 4. Implement Mitigation Measure 3.8.1b. 5. Implement Mitigation Measure 3.9.1.	1. Coordination with local and regional agencies. 2. Coordination with local and regional agencies. 3. Incorporate in contract specifications and Sign-off on inspection report and/ or MMRP that measures are being implemented.	1. Contractor/ Member Agency 2. Contractor/ Member Agency 3. Contractor 4. Contractor 5. Contractor 6. Contractor 7. Contractor/ Member Agency	1. Prior to and During Construction 2. Prior to and During Construction 3. Design and Prior to Construction 4. Design and prior to Construction 5. Prior to and During Construction 6. Prior to and During Construction	Member Agency

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
6. Implement Mitigation Measure 3.9.2. 7. Implement Mitigation Measure 3.9.3.	4. Review contract specifications. 5. Incorporate into contract specifications; sign-of on inspection report and/or MMRP. 6. Incorporate into contract specifications. 7. Incorporate into contract specifications; sign-of on inspection report and/or MMRP.		7. Design and Prior to Construction	

Aesthetics

Impact 3.14.1: Temporary Impact to Scenic Vistas

NBWRP construction activities could temporarily affect scenic vistas or corridors in the NBWRP area.

Mitigation Measure 3.14.1a

Following construction activities, disturbed areas shall be restored to baseline conditions, including repaving roadways, replanting trees, and/or reseeding with a native seed mix typical of the immediately surrounding area.

Mitigation Measure 3.14.1b

Berms around constructed reservoirs shall be vegetated with native seed mixes to soften the visual effect of the reservoirs from adjacent roadways.

Mitigation Measure 3.14-1c

Design elements shall be incorporated to enhance visual integration of the booster pump station and distribution pump station with their surroundings. Proposed facilities shall be painted low-glare earth-tone colors that blend with the surrounding terrain. Highly reflective building materials and/or finishes shall not be used in the designs for proposed facilities.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Restore disturbed areas to baseline conditions by repaving, replanting, and reseeding land. 2. Incorporate buffers, integrate natural design elements, and use appropriate building materials.	1. Inspect final site conditions after construction and verify its condition is it equivalent to that prior to construction. Incorporated into construction specifications. 2. Review construction specifications.	1. Contractor/ Member Agency 2. Contractor	1. After Construction 2. Design and During Construction	Member Agency

Impact 3.14.2: Impact to Views Along Scenic Roadways

Implementation of NBWRP could affect views along eligible or designated Caltrans Scenic Highways, or locally-defined scenic routes.

Mitigation Measures

The appropriate Member Agency will implement the following measures:

Mitigation Measure 3.14.1a
Mitigation Measure 3.14.1b

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.14.1a. 2. Implement Mitigation Measure 3.14.1b.	1. Review construction specifications. 2. Review construction specifications and landscape design.	1. Contractor/ Member Agency 2. Contractor	1. After Construction 2. Design and During Construction	Member Agency

Impact 3.14.3: Source of Light or Glare

NBWRP components could introduce new sources of light and glare on the project sites.

Mitigation Measures

The appropriate Member Agency will implement the following measures:

Mitigation Measure 3.14.3a: The exterior lighting installed around the operational and capacity storage reservoirs, distribution pump station, storage tanks, and booster pump station shall be of a minimum standard required to ensure safe visibility. Lighting also shall be shielded and directed downward to minimize impacts of light and glare.

Measure 3.14.3b: All exterior lighting is directed downward and oriented to insure that limited light source is directly visible from neighboring residential areas. If necessary, landscaping would be provided around proposed facilities. The vegetation would be selected, placed, and maintained to minimize off-site light and glare onto surrounding areas.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Incorporate shielded, downward-oriented, low intensity light sources in design. 2. Plant vegetation to act as a natural buffer around areas that require lighting.	1. Review construction specifications. 2. Review construction specifications.	1. Member Agency 2. Member Agency	1. During Design 2. During Design and After Construction	Member Agency

Impact 3.14.4: Long-term Impact to Aesthetic Character

Development of the proposed facilities, particularly pump stations and storage reservoirs, would permanently alter the aesthetic character of the project area.

Mitigation Measures

The appropriate Member Agency will implement the following measures:

Mitigation Measure 3.14.4a: After construction of any facility that is above grade and visible to sensitive receptors, visual screening and vegetation measures will be implemented to reduce impacts to scenic views. Trees or other suitable vegetation along the fenceline of the facility should be incorporated to reduce the industrial appearance of the structures. Similarly, berms for new storage ponds or pond reconfiguration will be re-vegetated to reduce the barren appearance of the berms.

Mitigation Measure 3.14.4b: Dark colored, non-reflective building materials should be used for project components that cause potentially significant impact from glare to visual resources.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Install screens and vegetation, and trees along fenceline; seed reconfigured berms with native grasses. 2. Integrate natural design elements, and use appropriate building materials.	1. Review construction specifications and landscape design. 2. Review construction specifications.	1. Contractor/ Member Agency 2. Contractor/ Member Agency	1. Design and After Construction 2. Design and During Construction	Member Agency

Cumulative Impacts

Impact 4.1. Construction-related Cumulative Impacts.

Concurrent construction of several projects within the Sonoma, Napa, and Marin County areas could result in cumulative short-term impacts associated with construction activities. If implemented at the same time as other construction projects, construction of facilities under all three of the alternatives could contribute to potential short-term cumulative effects associated with erosion, cultural resource disturbance, disturbance of adjacent land uses, traffic disruption, dust generation, construction noise, aesthetics, air quality, biological resources, hazardous materials, water quality, public services and utilities. However, construction-related impacts would not result in long term alteration of the environment, and could be mitigated to less than significant levels through the use of mitigation measures identified throughout Chapter 3.

Mitigation Measure

The appropriate Member Agency will implement the following measure:

> **Mitigation Measure 4.1a:** Member Agencies shall coordinate construction activities along selected alignments to identify overlapping pipeline routes, project areas, and construction schedules. To the extent feasible, construction activities shall be coordinated to consolidate the occurrence of short-term construction-related impacts.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Coordinate construction activities to identify overlapping routes and construction schedules.	1. Incorporate into contract specifications.	1. Member Agency	1. Prior to Construction	Member Agency

Impact 4.5

Concurrent construction of NBWRP with other projects proposed in the Sonoma, Napa, and Marin County area, and other water and wastewater infrastructure projects, could result in cumulative long-term impacts to biological resources.

Mitigation Measures

> Mitigation Measures in Section 3.5.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Implement Mitigation Measure 3.5.1. 2. Implement Mitigation Measure 3.5.2. 3. Implement Mitigation Measure 3.5.3. 4. Implement Mitigation Measure 3.5.5. 5. Implement Mitigation Measure 3.5.6. 6. Implement Mitigation Measure 3.5.9.	1. Comply with regulatory permit; Sign-off on inspection report and/ or MMRP. 2. Comply with regulatory permit; Sign-off on inspection report and/ or MMRP. 3. Comply with regulatory permit; Sign-off on inspection report and/ or MMRP. 4. Comply with regulatory permit; Sign-off on inspection report and/ or MMRP. 5. Comply with regulatory permit; Sign-off on inspection report and/ or MMRP. 6. Incorporate into contract specifications.	1. Member Agency/ Contractor 2. Member Agency/ Contractor 3. Member Agency/ Contractor 4. Member Agency/ Contractor 5. Member Agency/ Contractor 6. Contractor/ Qualified Biologist	1. Prior to and During Construction 2. Prior to and During Construction 3. Prior to and During Construction 4. Prior to and During Construction 5. Prior to and During Construction 6. Prior to and During Construction	Member Agency

Growth Inducement and Secondary Effects of Growth

Impact 5.1. Direct and Indirect Impacts on Growth.

NBWRP would provide recycled water for urban, agricultural, and environmental uses, and as such, would contribute to the provision of adequate water supply to support a level of growth that is consistent with the amount planned and approved within the General Plans of Marin, Sonoma and Napa Counties. No appreciable growth in population or employment would occur as a direct result of construction or operation of the proposed facilities. However, development under the General Plans accommodated by the proposed project would result in secondary environmental effects, which include effects that would be significant and unavoidable. No additional impacts are anticipated beyond those identified in General Plan EIRs for each County.

Mitigation Measure 5.1a

In order to maintain consistency with the Napa County General Plan, Napa County and Napa SD will approve the MST Local Options 1 and/or 2. This will provide approximately 530 AFY of recycled water that would be available for the existing users in the MST area. Trunk facilities may be sized to accommodate service of up to 1,400 AFY of service to existing agricultural irrigators only. Any expansion of service beyond the 1,400 AFY or provision of service to new

land uses would be subject to approval by the County Planning Department and the Napa County Board of Supervisors.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule	Responsible Agency
1. Conduct additional land use and CEQA analysis prior to service to un-irrigated parcels or beyond above 1400 AFY.	1. CEQA approval process.	1. Napa County and Napa SD	1. Prior to Project Approval	Napa County/ Napa SD

CHAPTER 12
List of EIR/EIS Preparers

A list of persons who prepared various sections of the EIR/EIS, prepared significant background materials, or participated to a significant degree in preparing the EIR/EIS is presented below.

North Bay Water Reuse Authority (NBWRA)

Sonoma County Water Agency (CEQA Lead Agency)

Marc Bautista	Project Manager
Kevin Booker	Project Engineer
Chuck Weir	Program Manager (NBWRA)

Bureau of Reclamation (NEPA Lead Agency)

David White	Program and Project Manager
Douglas Kleinsmith	Environmental Specialist

NBWRA Member Agencies

Las Gallinas Valley Sanitary District

Marc Williams	General Manager

Novato Sanitary District

Beverly James	Manager-Engineer

Sonoma Valley County Sanitation District

See Sonoma County Water Agency above.

Napa Sanitation District (Member Agency)

Michael Abramson	General Manager
Tim Healy	Assistant General Manager/ District Engineer

NBWRA Supporting Agencies

North Marin Water District

Chris Degabriel	General Manager
Drew McIntyre	Chief Engineer

Napa County

Hillary Gitelman	Director of Conservation, Development, and Planning
Felix Riesenberg	Principal Water Resources Engineer

TABLE 12-1
LIST OF PREPARERS

Name	Qualifications	Participation
ESA		
James E. O'Toole	B.A., Geography; over 15 years experience in water and wastewater infrastructure projects, and environmental documentation for CEQA and NEPA	Project Manager
Asavari Devadiga	M.S., Environmental Science and Policy, M.S., Environmental Pollution Control Technology, B.S., Microbiology; 7 years experience in wastewater engineering and environmental pollution control technology	Deputy Project Manager; Growth Inducement; Alternatives; Climate Change
Cherie Kolin	B.S., Ecology and Systematic Biology; 2 years of experience	Project Coordinator; Public Services and Utilities; Recreation; Irreversible Commitment of Resources; Relationship of Uses and Productivity; Consultation
Katie Blank	B.S., Environmental Management and Protection; 1 year of experience	Aesthetics; Alternatives; Cumulative Impacts
Chris Rogers	B.S., Biology; 20 years of experience in permitting, regulatory compliance, wetland ecology and restoration planning, habitat assessments, endangered species evaluations, restoration and mitigation planning	Biological Resources
Natasha Dvorak	B.A., Biology; 3 years of experience	Biological Resources
Paul Garcia	B.S., Environmental Policy Analysis and Planning; 5 years of experience	Land Use and Agricultural Resources
Eric Schniewind	B.A., Geological Sciences; 13 years of experience as a geologist, hydrogeologist, and hydrologist	Geology, Soils and Seismicity
Heidi Koenig	B.A., Anthropology, M.A., Cultural Resources; Registered Professional Archaeologist; 8 years of experience specializing in California archaeology	Cultural and Paleontological Resources; Indian Trust Assets
Jack Hutchison	M.Eng., Transportation Engineering, B.S., Civil Engineering; 30 years of experience in a wide range of transportation analyses, from planning level impact analyses to operations and design evaluations	Traffic and Transportation
Matthew Fagundes	B.S., Environmental Studies, M.A., Physical Geography; 12 years of experience evaluating air quality and noise impacts to the environment	Air Quality; Noise
Nicole Yeto	B.A., Geography and Environmental Studies; AERMOD Air Dispersion Modeling Workshop; 2 years of experience	Air Quality; Noise
Lisa Bautista	20 years of experience	Technical Editing
Wes McCullough	B.A., Geography with GIS emphasis; 5 years of experience	GIS
Ron Teitel, Perry Jung	B.A., Geography; 20 years of experience B.F.A., Design; 20 years of experience	Graphics
Anthony Padilla, Ricardo Ramirez	14 years of experience 7 years of experience	Production
Victor Mullins	M.L..S., Library and Information Science, B.A., English Literature; 8 years of experience	References; Administrative Record

TABLE 12-1 (Continued)
LIST OF PREPARERS

Name	Qualifications	Participation
CDM		
Andria Loutsch, AICP	B.S., Economics; 12 years experience	Project Manager, Oversight and Review
Chris Park, AICP, LEED AP	B.S., Natural Resources Planning & Interpretation, Masters in City and Regional Planning; 3 years of experience	Water Quality
James LaVelle, Ph.D.	B.A., Biological Sciences, M.A., Biology, M.S., Industrial and Environmental Toxicology, Ph.D., Biology; 24 years of experience	Water Quality Reviewer
W. Don Vandertulip, P.E.	B.S., Civil Engineering, M.S., Sanitary Engineering; 35 years of experience	Water Quality Reviewer
Jennifer Jones	B.A. Biology, M.S. Environmental Science; 15 years of experience	Hazardous Materials
Henry Boucher, P.E., BCEE, AICP	Sc.B., Materials Engineering, M.S., Environmental Engineering; 35 years of experience	Hazardous Materials Reviewer
Carolyn Buckman, P.E.	B.S., Environmental Engineering, B.S., Planning, M.Eng., Environmental Engineering; 10 years of experience	Surface Hydrology
Michael Savage, P.E., D. WRE.	B.S., Soil and Water Science, M.S., Civil Engineering; 30 years of experience	Surface Hydrology Reviewer
Stacy Porter	B.A., Environmental Studies; 4 years experience	Groundwater Resources
Brian Heywood, P.E.	B.S., Civil Engineering, M.S., Civil Engineering; 11 years of experience	Groundwater Resources Reviewer
Gina Veronese	B.S., Agricultural Economics, M.S., Agricultural and Resource Economics; 7 years of experience	Socioeconomics, Environmental Justice
Anthony Skidmore, AICP	B.A., Sociology, M.P.A., Public Administration; 25 years of experience	Socioeconomics, Environmental Justice Reviewer
Mike Podlech, Aquatic Biologist		
Mike Podlech	M.S., Aquatic Ecology, B.S., Environmental Science, 15 years of experience	Aquatic Biology
Rauch Communication Consultants Inc.		
Martin Rauch	B.A., History; 18 years of experience	Public Outreach
Muelrath Public Affairs		
Taylor McDaniel	M.A., Ecology, Culture and Sustainable Community; 10 years of experience	Public Outreach

CHAPTER 13
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