CITY OF SANTA BARBARA

SUBSURFACE DESALINATION INTAKE FEASIBILITY STUDY

TECHNICAL MEMORANDA NOS. 1 and 2

Technical Memorandum No. 1:
Introduction, Background, and Project Alternatives
FINAL – DECEMBER 2015

Technical Memorandum No. 2:
Regulatory and Permitting Requirements
FINAL – DECEMBER 2015

CITY OF SANTA BARBARA

SUBSURFACE DESALINATION INTAKE FEASIBILITY STUDY

TECHNICAL MEMORANDUM NO. 1
INTRODUCTION, BACKGROUND, AND PROJECT ALTERNATIVES

FINAL
December 2015

3150 BRISTOL STREET, SUITE 500 • COSTA MESA, CALIFORNIA 92626 • P. 714.593.5100 • F. 714.593.5101

City of Santa Barbara

Subsurface Desalination Intake Study

TECHNICAL MEMORANDUM
NO. 1
Introduction, Background, and Project Alternatives: Subsurface Desalination Intake

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1.0 INTRODUCTION AND BACKGROUND

This report presents the background and findings associated with a subsurface desalination intake feasibility study completed by the City of Santa Barbara, California. This section of the report presents the background, study scope and goals, study methods, and a summary of alternatives considered.

1.1 Background

On September 23, 2014 the City of Santa Barbara City Council directed Public Works Department staff to report back on a plan to evaluate the feasibility of subsurface desalination intakes (subsurface intake) and potable reuse, including indirect and direct potable reuse options. The direction given by City Council was to report back with a plan for this evaluation following award of the desalination plant contract in April 2015. Furthermore, on January 30, 2015, the Central Coast Regional Water Quality Control Board (RWQCB) adopted an amendment to the City's El Estero Wastewater Treatment Plant (WWTP) Waste Discharge Requirements (WDR) that included a condition that the City should report back to the RWQCB by August of 2015 with a Work Plan that will result in completed feasibility studies by June 2017.

The City subsequently retained the services of Carollo Engineers, Inc. (Carollo) to complete these studies. Carollo delivered the work for these feasibility studies under three work authorizations:

- **Work Authorization 1:** Work Plans for both the subsurface desalination intake and potable reuse studies.
- **Work Authorization 2:** Subsurface desalination intake initial screening analysis and potable reuse feasibility study.
- **Work Authorization 3:** Subsurface desalination intake feasibility study.

A programmatic workflow diagram for the subsurface intake study (i.e., Work Authorizations 1, 2 and 3) is presented in Figure 1.1.

1.2 Scope

The City Council meeting minutes from September 23, 2014, Agenda Item 16: *Authorize Actions and Adopt a Resolution for Reactivating the Charles E. Meyer Desalination Facility*, state that there was an additional motion "to direct staff to return to the City Council after the [Desalination Plant Reactivation] contract decision is made in April [2015] to begin exploring a range of alternatives, including subsurface intake and potable reuse options."

To determine City Council's intent as to the scope of this study, the verbal transcript of the meeting was examined. In review of this transcript, the verbal intent was to "direct staff…[to evaluate the] feasibility, cost, and timeline associated with both converting the offshore facility to a subsurface intake and look at the options about potable reuse".[1]

This motion was further adopted by the Central Coast RWQCB, who on January 30, 2015 amended the City's NPDES Permit (AMENDED ORDER NO. R3-2010-0011, NPDES NO. CA0048143) and in Section VI Paragraph C.6.c.iii (Special Provisions, Desalination Facility) adopted a provision to require the City to "Analyze the feasibility of a range of alternatives, including subsurface intake and potable reuse options."

Therefore, the direction given by both the City Council and RWQCB, relative to the scope of this study was to evaluate the feasibility of:

1. A replacement of the City's open ocean intake using a subsurface intake.
2. Potable reuse alternatives, also in the context of a replacement of desalination plant's open ocean intake use.

1.3 Study Methods

The City was required to submit a Work Plan for evaluating subsurface desalination intake alternatives to the RWQCB by August 2015. On August 31, 2015, the City submitted the Work Plan, which is presented in Appendix A. The objective of the Work Plan is to present the methodology and procedures that were used to perform the subsurface desalination intake feasibility study. Objectives of the Work Plan include:

1. Establish the project schedule.
2. Establish the methods to determine the design basis. Design basis includes intake capacity and site alternative evaluation.
3. Establish the types of subsurface intakes to be studied.
4. Establish procedure to identify sites for subsurface intakes and raw water conveyance piping
5. Establish a procedure to determine subsurface properties
6. Establish procedure to model subsurface intake's influence on the sustainability of the City's drinking water aquifer (capacity and water quality).
7. Establish procedure to estimate subsurface intake water quality and any additional treatment needs.
8. Establish the scope of cost estimates and cost estimating procedures.

[1] Mayor Schneider, as documented on September 23, 2014 City Council Meeting video recording (available on the City's website): http://media-07.granicus.com:443/OnDemand/santabarbara/santabarbara_d2343df5-8a20-499d-b1fb-5dda1f9e0414.mp4 at 2 hours and 33 minutes.

9. Establish and define feasibility screening criteria.
10. Establish and define initial screening criteria that may limit further consideration of project alternatives.
11. Establish technical advisory panel role, procedures, and objectives.
12. Establish the role of outside agencies (e.g., RWQCB, California Coastal Commission, etc.) and City residents.

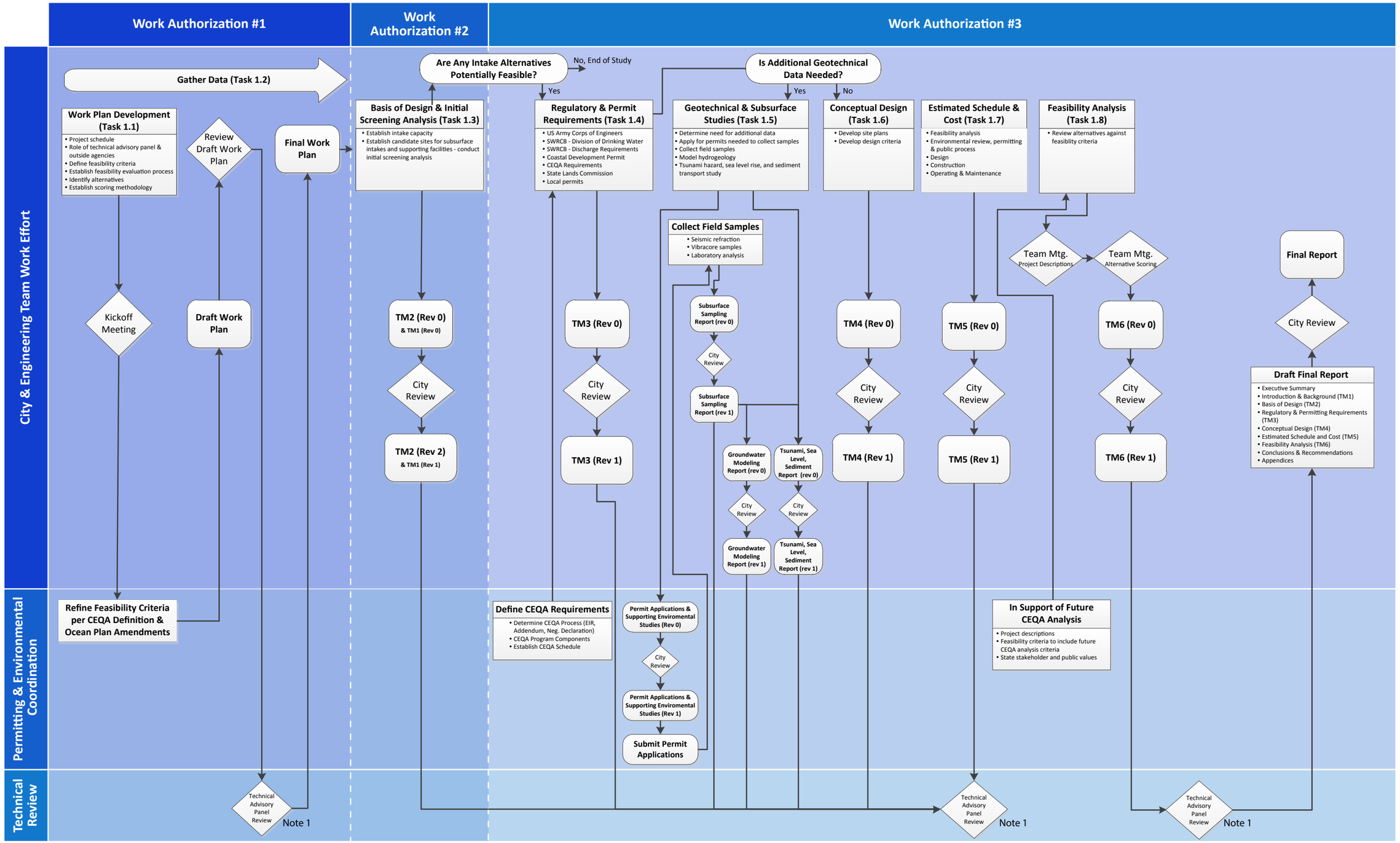
The subsurface intake feasibility study Work Plan, presented in Appendix A, is organized into the following sections:

- Introduction
- Basis of Design
- Feasibility and Initial Screening Criteria
- Implementation Schedule Development
- Cost Estimating Methodology
- Feasibility Analysis
- Technical Advisory Process

The City's potable reuse feasibility study is addressed in a separate Work Plan.

The programmatic workflow diagram presented in Figure 1.1 shows the chronology that project work product was developed and reviewed for each of the subsurface intake feasibility study's work authorizations. As noted in Figure 1.1, only potentially feasible alternatives are evaluated in as part of subsequent tasks. Initial screening was performed and if enough data was available to determine that the alternative does not pass initial screening, no further feasibility analysis was performed for that subsurface intake alternative.

A complete project schedule including the anticipated dates of all project milestones and deliverables is presented in Figure 1.2.



Notes:

1. It is envisioned that the technical advisory process includes a public meeting where stakeholders will be given a chance to state their interests in the City's study effort and comment upon the direction of the City's work product.

Figure 1.1 - Subsurface Desalination Intake Feasibility Study Programmatic Work Plan

Subsurface Desalination Intake & Potable Reuse Feasibility Studies

ID	Task Name	Duration	Start	Finish
1	**Notice to Proceed (Work Authorization 1)**	1 day	Fri 5/1/15	Fri 5/1/15
2	Notice to Proceed (Work Authorization 2)	1 day	Tue 9/22/15	Tue 9/22/15
3	Notice to Proceed (Work Authorization 3)	1 day	Mon 11/23/15	Mon 11/23/15
4	**TASK 1 - SUBSURFACE DESALINATION INTAKE FEASIBILITY STUDY**	**526 days**	**Fri 5/1/15**	**Fri 5/5/17**
5	**1.1 Work Plan Development**	**114 days**	**Fri 5/1/15**	**Wed 10/7/15**
6	Kickoff Meeting	1 day	Wed 5/20/15	Wed 5/20/15
7	Draft Work Plan	36 days	Fri 5/1/15	Fri 6/19/15
8	City Review	5 days	Mon 6/22/15	Fri 6/26/15
9	Submit Draft Work Plan to RWQCB	1 day	Mon 6/29/15	Mon 6/29/15
10	RWQCB Approval/Comments	1 day	Tue 7/21/15	Tue 7/21/15
11	Final Work Plan	10 days	Thu 8/13/15	Wed 8/26/15
12	TM1 (Revision 0): Intro, Background & Project Alternatives	15 days	Thu 8/27/15	Wed 9/16/15
13	City Review	5 days	Thu 9/17/15	Wed 9/23/15
14	TM1 (Revision 1): Intro, Background & Project Alternatives	10 days	Thu 9/24/15	Wed 10/7/15
15	**1.2 Literature Review**	**106 days**	**Fri 5/1/15**	**Fri 9/25/15**
16	Collect Literature	99 days	Fri 5/1/15	Wed 9/16/15
17	Data Collection List Updates	**105 days**	**Mon 5/4/15**	**Fri 9/25/15**
18	Weekly Data Collection Updates	16 days	Mon 5/4/15	Mon 5/25/15
23	Monthly Data Collection Updates	66 days	Fri 6/26/15	Fri 9/25/15
28	**1.3 Basis of Design & Initial Screening Analysis**	**55 days**	**Wed 9/23/15**	**Tue 12/8/15**
29	**1.3.1 Prelim. Geophysical Studies (Tsunami, Sea Level Rise & Sediment Transport)**	**35 days**	**Wed 9/23/15**	**Tue 11/10/15**
33	**1.3.2 Basis of Design and Initial Screening**	**35 days**	**Wed 10/21/15**	**Tue 12/8/15**
37	**1.4 Regulatory Requirements**	**30 days**	**Wed 9/23/15**	**Tue 11/3/15**
41	**1.5 - Geotechnical & Subsurface Studies**	**220 days**	**Tue 11/24/15**	**Mon 9/26/16**
42	**1.5.1 Permitting for Subsurface Data Collection/Sampling**	**35 days**	**Tue 11/24/15**	**Mon 1/11/16**
52	**1.5.2 Field Activities for Geotechnical and Subsurface Data Collection/Sampling**	**125 days**	**Tue 3/8/16**	**Mon 8/29/16**
57	**1.5.3 Groundwater Modeling**	**35 days**	**Tue 8/9/16**	**Mon 9/26/16**
61	**1.6 Conceptual Design**	**45 days**	**Tue 9/6/16**	**Mon 11/7/16**
65	**1.7 Estimated Schedule and Cost**	**25 days**	**Tue 10/4/16**	**Mon 11/7/16**
69	**1.8 Feasibility Analysis**	**113 days**	**Tue 11/8/16**	**Thu 4/13/17**
79	**1.9 Subsurface Desalination Intake Feasibility Report**	**35 days**	**Fri 4/14/17**	**Thu 6/1/17**
83	**TASK 2 - NOT USED**	**333 days**	**Tue 11/24/15**	**Thu 3/2/17**
108	**TASK 3 - POTABLE REUSE FEASIBILITY STUDY**	**248 days**	**Fri 5/1/15**	**Tue 4/12/16**
109	**3.1 Work Plan Development**	**109 days**	**Fri 5/1/15**	**Wed 9/30/15**
110	Kickoff Meeting	1 day	Wed 5/20/15	Wed 5/20/15
111	Draft Work Plan	36 days	Fri 5/1/15	Fri 6/19/15
112	City Review	5 days	Mon 6/22/15	Fri 6/26/15
113	Submit Draft Work Plan to RWQCB	1 day	Mon 6/29/15	Mon 6/29/15
114	RWQCB Approval/Comments	1 day	Tue 7/21/15	Tue 7/21/15
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116	TM1 (Revision 0): Intro, Background & Project Alternatives	15 days	Thu 8/27/15	Wed 9/16/15
117	City Review	5 days	Thu 9/17/15	Wed 9/23/15
118	TM1 (Revision 1): Intro, Background & Project Alternatives	5 days	Thu 9/24/15	Wed 9/30/15
119	**3.2 Literature Review**	**106 days**	**Fri 5/1/15**	**Fri 9/25/15**
120	Collect Literature	99 days	Fri 5/1/15	Wed 9/16/15
121	Data Collection List Updates	105 days	Mon 5/4/15	Fri 9/25/15
122	Weekly Data Collection Updates	16 days	Mon 5/4/15	Mon 5/25/15
127	Monthly Data Collection Updates	66 days	Fri 6/26/15	Fri 9/25/15
132	**3.3 Regualtory and Permit Requirements**	**30 days**	**Thu 8/27/15**	**Wed 10/7/15**
136	**3.4 Conceptual Design**	**45 days**	**Thu 8/27/15**	**Wed 10/28/15**
140	**3.5 Estimated Schedule and Cost**	**25 days**	**Thu 9/24/15**	**Wed 10/28/15**
144	**3.6 Feasibility Analysis**	**70 days**	**Thu 12/31/15**	**Wed 4/6/16**
154	**3.7 Potable Reuse Feasibility Report**	**7 days**	**Mon 4/4/16**	**Tue 4/12/16**
158	**TASK 4 - TECHNICAL ADVISORY PROCESS**	**453 days**	**Wed 8/12/15**	**Fri 5/5/17**
159	Workshop 1: Work Plan	1 day	Wed 8/12/15	Wed 8/12/15
160	Workshop 2: Initial Screening	1 day	Wed 12/30/15	Wed 12/30/15
161	Workshop 3: Feasibility Analysis (Potable Reuse Study)	1 day	Fri 5/5/17	Fri 5/5/17
162	Workshop 4: Feasibility Analysis (Subsurface Study)	1 day	Fri 4/1/16	Fri 4/1/16
163	**RWQCB FINAL REPORT DEADLINE**	1 day	Fri 6/2/17	Fri 6/2/17

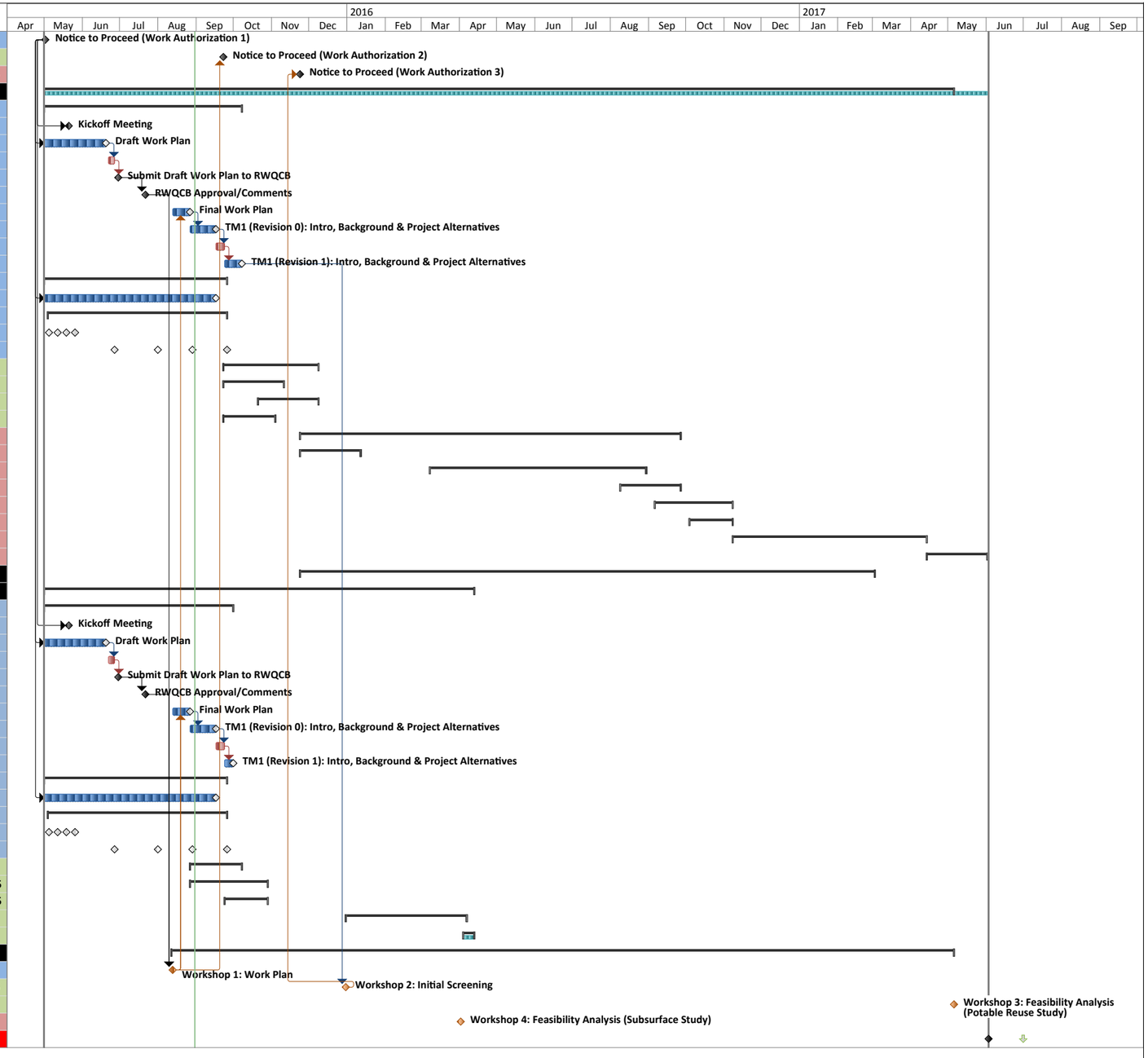


Figure 1.2 - Project Schedule

1.4 Goal of Study

The goal of this study was to meet the requirements set forth by City Council and the RWQCB that were described in Section 1.2. However, this study may also inform future studies including future updates to the City's Long Term Water Supply Plan. The City's primary water source is Cachuma Reservoir, which provides over 50 percent of the City's water supply during a normal (non-drought) year. The City's water supply allocation from Cachuma could be reduced in the future due to pending federal environmental decisions on a revised Biological Opinion for the Cachuma Project, reduced operational yield due to siltation in the reservoir, and reduced drought yield as a result of the current historic drought. The City's supply planning will need to be updated to address shortages caused by such reductions to the City's existing Cachuma supply. Options for replacing a reduced Cachuma supply may include desalination and potable reuse.

Because the amount of the reduction from the City's Cachuma supply is unknown at this time, it is premature for the City to evaluate exact desalination and potable reuse capacity options that may or may not meet the City's needs. The timing for this analysis would be more appropriate following the final federal environmental decisions and operational yield analyses that determine the future Cachuma allocations. Therefore, the direction given by City Council and the RWQCB (as presented in Section 1.3) is appropriate at this time because it determines the maximum capacity that is technically feasible from subsurface intakes and potable reuse without requiring the City to invest in developing many project concepts that may or may not meet the City's future needs pending forthcoming environmental and operational yield decisions.

Thus, the goal of this study was to understand the maximum yield that is technically feasible for subsurface intake alternatives potable reuse alternatives (subject of a separate feasibility study report). The maximum yield will provide information on whether the alternatives could replace the open ocean intake independently, and potentially combined. How the City will use of these technically feasible maximum yields needs to be informed by the City's need, which will follow at a later date. Therefore, the information developed in this study will inform future studies, such as an update to the City's Long Term Water Supply Plan.

Feasibility and initial screening criteria are presented in Section 3 of the Work Plan. Alternatives are first subjected to initial screening criteria, which are based on technical feasibility criteria and capacities defined under current project objectives. It was anticipated that alternatives may end up in the following three general categories:

1. **Infeasible** – The alternative does not pass the initial screening criteria and is fatally flawed due to technical criteria.

   Action: The alternative shall not be considered further in this study and is not recommended for inclusion in future studies.

2. **Potentially feasible, does not meet Study goals** – The alternative meets technical screening criteria and is potentially feasible. However, the alternative's capacity does not meet the current Study goals.

   Action: The alternative shall not be considered further in this study but is potentially feasible and may be considered in future studies. Information collected during the screening process is useful to inform future studies.

3. **Potentially feasible** – The alternative passes through the initial screening stage and is considered potentially feasible.

   Action: The alternative shall be considered further in this study under current objectives and is subject to the work sequence laid out in the Work Plan.

1.5 Technical Advisory Process

The technical advisory process described in the Work Plan provided an independent, third party review of the project work product at key intervals throughout the project duration, as the work product was developed. The technical advisory process shall achieve the following objectives:

1. Provide timely review of project work product by experts in the required subject matter to advise and guide the City's feasibility study.
2. Facilitate input from project stakeholders that can be used to inform the City's comparison of potentially feasible alternatives.
3. Create a record of the review and stakeholder process to be included as an appendix to the feasibility study report.

To assist the Central Coast Regional Water Quality Control Board administer the technical advisory process, the City retained the services of the National Water Research Institute (NWRI). NWRI is a California non-profit organization whose activities include ensuring safe, reliable sources of water now and for future generations through a variety of research, education, and public out-reach activities. NWRI has facilitated similar technical advisory programs on subsurface intake and potable reuse feasibility projects in California, including programs for both municipal and state regulatory agencies. NWRI retained the services of the experts that reviewed the work, facilitate the project meetings (i.e., that included an opportunity for stakeholder comments) and complete the documentation of the technical review and stakeholder process. Refer to the Work Plan (Appendix A) for additional information regarding the technical advisory process.

1.6 Subsurface Intake Project Alternatives

The purpose of this section is to present the project alternatives considered for this study. The basis for establishing and evaluating project alternatives is presented in the Work Plan (Appendix A) and subsequently in Section 2 of this report.

1.6.1 Capacity

As described earlier, the goal of this Study is to understand the maximum yield that is technically feasible for subsurface desalination intake alternatives and potable reuse alternatives, and to evaluate the feasibility of alternatives to replace the City's existing screened open ocean intake. All alternatives went through technical evaluation to determine the maximum yield achievable. The target yield for each alternative was based on the City's permitted capacity for screened open ocean intake, which is 10,000 acre-feet per year (AFY) of finished desalinated water supply. Each subsurface intake shall therefore be designed to produce 15,898 gallons per minute (gpm) of seawater to meet the target yield.

1.6.2 Project Site Alternatives

Project site alternatives for a subsurface intake shall include the following areas due to their proximity to the City's desalination plant, the proximity to the existing intake line and its existing easement for a railroad crossing, and the availability of prior geotechnical data. [2,3,4,5,6]

1. East Beach
2. West Beach
3. Leadbetter Beach
4. 401 E. Yanonali Street (i.e., City Corporation Yard, APN #017-540-006), and
5. 103 S. Calle Cesar Chavez (APN #017-113-020)

[2] Outfall pipeline easement granted by Southern Pacific Railroad Company: Recording Instrument, Book 902, pages 111 through 120, dated November 28, 1949.
[3] CH2M Hill. 1989. Draft Technical Memorandum No. 3: Report on Preliminary Hydrogeologic Testing on East Beach, Santa Barbara. Prepared for City of Santa Barbara, California.
[4] CH2M Hill. 1990. Desalination Feasibility Study Summary Report. Prepared for City of Santa Barbara and Goleta Water District, California.
[5] CH2M Hill. 1990. Draft Technical Memorandum: Report on Hydrogeologic Testing of Beach Sand Lens, Santa Barbara. Prepared for City of Santa Barbara.
[6] Martin, P., Berenbrock, C., 1986. Ground-Water Monitoring at Santa Barbara, California: Phase 3 – Development of a Three-Dimensional Digital Ground-Water Flow Model for Storage Unit I of the Santa Barbara Ground-Water Basin, U.S. Geological Survey Water-Resources Investigations Report 86-4103.

These locations are identified in Figure 1.3. At these locations, this study focused on the areas onshore and offshore, depending upon the intake technology that is being considered. For offshore areas, only the submerged tideland areas that fall within the sovereign lands legislatively granted to the City, pursuant to Chapter 78, Statutes of 1925, as amended (Grant) were considered. The seaward limit of this Grant is the U.S. pierhead line, established by the Secretary of the Navy and located one-half (1/2) mile offshore.[7] Consideration of only this offshore area simplifies property acquisition requirements (i.e., lease from the California State Lands Commission (CSLC)) for any lands required by subsurface intake facilities.

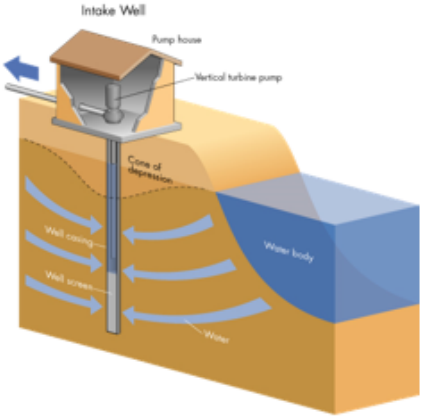
1.6.3 Intake Technology Alternatives

Based upon the state of intake technology and recent studies conducted by others, the following intake technology alternatives are considered for this study.[8,9,10,11,12] Figure 1.4 presents a schematic for each of the subsurface desalination intake technologies that were analyzed in this study.

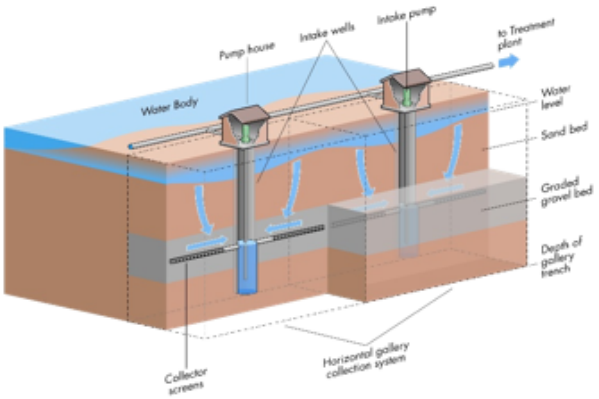
1. Vertical wells
2. Lateral beach wells (onshore infiltration galleries)
3. Horizontal collector wells (i.e., Ranney wells)
4. Slant wells
5. Subsurface infiltration galleries (SIG) – offshore
6. Horizontal directionally drilled (HDD) wells (i.e., Neodren)

[7] CSLC. 2014. Correspondence between California State Lands Commission (CLSC) and Joe Monaco (Dudek), Subject: Request for Consistency Determination for the Reactivation of a Desalination Plant with Lease No. PRC 4942.9, a General Permit - Public Agency Use to the City of Santa Barbara Channel, City of Santa Barbara, Santa Barbara County. August 20, 2014.
[8] Mackey. E.D., et al. 2011. Assessing Seawater Intake Systems for Desalination Plants. Water Research Foundation. Denver, CO.
[9] Kennedy/Jenks Consultants. 2011. scwd^2 Seawater Desalination Intake Technical Feasibility Study. Prepared for scwd^2 Desalination Program. September 2011.
[10] SWRCB. 2012. Mitigation and Fees for the Intake of Seawater by Desalination and Power Plants, Final Report. March 12, 2012.
[11] Missmer. 2013. Subsurface Intakes for Seawater Reverse Osmosis Facilities: Capacity Limitation, Water Quality Improvement, and Economics. Desalination. Elsevier. 322 (2013) 37-51.
[12] ISTAP. 2014. Final Report: Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California. Published under the Auspices of the California Coastal Commission and Poseidon Resources (Surfside) LLC. October 9, 2014.

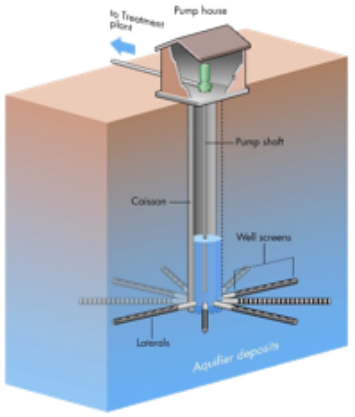
Figure 1.3 - Subsurface Intake Project Site Alternatives



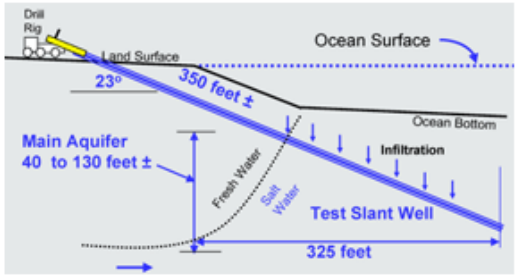
Vertical Wells



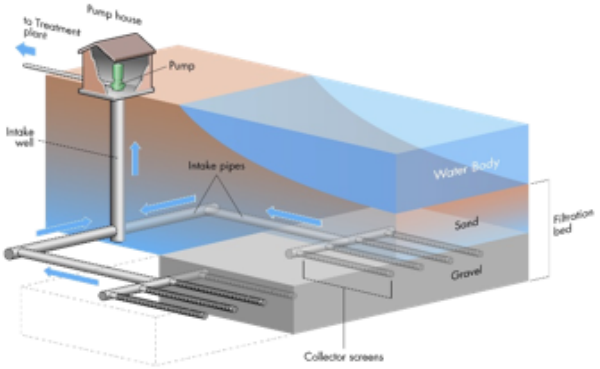
Lateral Beach Wells
(onshore infiltration galleries)



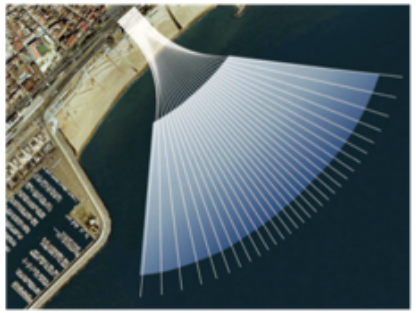
Horizontal Collector Wells
(i.e., Ranney Wells)



Slant Wells



SIG – offshore



HDD wells
(i.e., Neodren)

Figure 1.4 - Subsurface Intake Technology Alternatives

APPENDIX A – SUBSURFACE INTAKE STUDY WORK PLAN

CITY OF SANTA BARBARA

SUBSURFACE DESALINATION INTAKE FEASIBILITY STUDY

TECHNICAL MEMORANDUM NO. 2
REGULATORY AND PERMITTING REQUIREMENTS

FINAL
December 2015

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City of Santa Barbara

Subsurface Desalination Intake Study

TECHNICAL MEMORANDUM NO. 2

Regulatory and Permitting Requirements: Subsurface Intake

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2.0 REGULATORY AND PERMITTING REQUIREMENTS

2.1 Introduction

This section presents a summary of the relevant environmental, regulatory, and permitting requirements related to developing a subsurface desalination intake system for the City of Santa Barbara's Charles Meyer Desalination Plant. The material in this section includes a summary of:

- Definition of the types of subsurface intake technologies considered; and
- General regulatory or permitting process requirements.

The scope of following regulatory requirements and permits required to implement a subsurface desalination plant intake project in the City of Santa Barbara are presented in this Section:

- Testing and Data Collection
- Environmental Review
  - California Environmental Quality Act (CEQA)
- United States Army Corps of Engineers (ACOE)
  - Clean Water Act of 1977
  - Rivers and Harbors Act of 1899
- United States Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- California State Lands Commission (CSLC)
- State Water Resources Control Board (SWRCB)
  - Division of Drinking Water (DDW)
    - Operations Permit Amendment
    - Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR)
  - Regional Water Quality Control Board (RWQCB)
    - National Pollutant Discharge Elimination System (NPDES)
    - General Construction Activity Storm Water Permit
    - Section 401 Water Quality Certification

        - Porter-Cologne Water Quality Control Act

- California Coastal Commission
  - Coastal Development Permit
  - Coastal Zone Management Consistency Determination
- California Department of Fish and Wildlife (CDFW)
- Santa Barbara County Public Health Department
  - Water Well Permit Application
- City of Santa Barbara
  - Local Coastal Development Permit
  - Building permits

2.2 Subsurface Intake Technologies

Types of subsurface desalination plant intakes vary by capacity, design, and construction impact and methods. The choice of multiple types of intakes provides multiple alternatives so that the City can evaluate which type is technically feasible and poses the least social, environmental and economic impacts when considering design, operation and construction related activities. This evaluation considers six technology alternatives for a subsurface intake based upon the current state of subsurface intake technology. These subsurface intake technologies include:

1. Vertical wells
2. Lateral beach wells (onshore infiltration galleries)
3. Horizontal collector wells (i.e., Ranney wells)
4. Slant wells
5. Subsurface infiltration galleries (SIG) – offshore
6. Horizontal directionally drilled (HDD) wells (i.e., Neodren)

Additionally, the analysis of regulatory and permit requirements for each of these subsurface intake alternatives is considered at five potential project sites. These sites were selected based on their proximity to the City's desalination plant, the proximity to the existing intake pipeline and its existing easement for a railroad crossing, and the availability of prior geotechnical data. These sites include:

1. East Beach
2. West Beach
3. Leadbetter Beach

4. 401 E. Yanonali Street (i.e., City Corporation Yard, APN #017-540-006), and

5. 103 S. Calle Cesar Chavez (APN #017-113-020)

2.3 Testing and Data Collection

The goal is to develop subsurface desalination intake testing and data collection methods that will ensure reliable and safe production of water without harming sensitive habitats, mobilizing and capturing groundwater contamination, or impacting other groundwater users. The testing and data collection will pertain to the hydrologic and geologic conditions of the underlying soils and aquifers. This may include drilling bore holes and collection of soil samples to determine the transmissivity of marine sediments that would be required for all six subsurface intake alternative technologies (vertical wells, lateral beach wells, horizontal collector wells, slant wells, offshore SIG, and HDD wells) at each of the five alternative site locations. This type of testing and data collection could require a Coastal Development Permit (CDP) for activities performed within the Coastal Zone. Requirements and timeframes for obtaining a CDP are presented in Section 3.5.6, California Coastal Commission. Depending on the methodology required for drilling (e.g., production of side-stream discharges), Army Corps of Engineers (ACOE) Section 404 and Section 401 permits could be required (see Section 3.5.1 and Section 3.5.5.2 for details on Section 404 and Section 401 permits, respectively) as well as a National Pollution Discharge Elimination System (NPDES) permit for construction from the Regional Water Quality Control Board (RWQCB) (see Section 3.5.5.2 for details).

2.4 Environmental Review

2.4.1 California Environmental Quality Act (CEQA) Requirements

Construction of a subsurface intake will require certain discretionary actions by the City of Santa Barbara and other agencies. Those actions need to be examined in the context of California Code of Regulations, Title 14 (“State CEQA Guidelines”). California Public Resources Code, Sections 21000–21177 comprise the California Environmental Quality Act (CEQA) statute in California, which requires review and consideration of environmental effects when a California public agency, such as a City or County, carries out or approves a project. As defined in the CEQA Statute (Section 21065), “Project” means an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is any of the following:

- An activity directly undertaken by any public agency.
- An activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.

- An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

The Charles Meyer Desalination Plant was analyzed for potential environmental effects in three separate EIR's: first for the temporary facility, and then subsequently in conjunction with the City's adoption of its 1994 and 2011 Long Term Water Supply Plans that included seawater desalination as a permanent water supply facility to serve intermittently during drought periods. The City served as the lead CEQA agency for these environmental reviews.

Implementation of any of the six subsurface intake alternatives at any of the five alternative sites will require certain actions by the City of Santa Barbara and other agencies that may involve exercising discretion. Those actions need to be examined in the context of California Code of Regulations, Title 14 ("State CEQA Guidelines"). Sections 15162 through 15164 discuss a lead agency's responsibilities in handling new information, including any of the six subsurface intake alternatives or use of any of the five alternative sites, which were not included in a project's previous environmental impact reports.

Changes and environmental analysis added to the previous EIRs could be accomplished through an addendum, a supplement to an EIR, a subsequent EIR, or a subsequent mitigated negative declaration/negative declaration (MND/ND). If some changes or additions are necessary to the previously approved EIRs, but none of the changes or additions meet the standards as provided for a subsequent EIR pursuant to State CEQA Guidelines, Section 15162, then the lead agency is directed to prepare an Addendum to the Final EIR. An addendum is easier to process than a subsequent EIR or a supplement to an EIR because it has no public review period, does not require a formal adoption process by the lead agency, and is typically less costly and quicker to produce. If substantial changes to the project are proposed, there are substantial changes to the circumstances under which a project is undertaken, or new information of substantial importance is identified (e.g., new significant effects, previously identified significant effects are made substantially more severe, or new mitigation measures or alternatives are found to be feasible or would substantially reduce one or more previously identified significant effects), then a subsequent EIR or supplement to an EIR would be required.

A subsequent EIR has a high legal defensibility and standard of review. However, a subsequent EIR requires a larger scope of work, is typically higher in cost and longer in schedule, and has the potential for opening up prior analysis for litigation. If the conditions described for preparing a subsequent EIR in the State CEQA Guidelines Section 15162 exist, but only minor additions or changes would be necessary to make the previous EIR adequate, then a supplement to an EIR may be prepared. A supplement to an EIR has a high legal defensibility and standard of review while typically having a smaller scope of work, cost, and shorter schedule than a subsequent EIR. However, a supplement to an EIR requires clear substantiation as to why the changes in the project would only be considered "minor." A subsequent MND/ND could be prepared if the project would not result in any new

or more severe significant environmental effects. Although a subsequent MND/ND typically takes less time to prepare and costs less than a subsequent EIR or supplement to an EIR, it is subject to the fair argument test, which is a lower standard of legal review.

It is likely that all six subsurface intake alternatives would require either a subsequent EIR or a supplement to an EIR to comply with CEQA due to the potential for new or more severe construction related environmental effects related to potential biological, recreational, air quality, noise, or aesthetic impacts. However, if few wells/well head facilities are required, due to the relatively smaller environmental impact of vertical wells and HDD wells there is the potential that these two subsurface intake alternatives could be completed through a subsequent MND/ND. Similarly, it is probable that the five alternative sites would also require a subsequent EIR or a supplement to an EIR due to the potential for new impacts to resources in the five alternative site locations that were not analyzed in the previous EIRs.

The process to prepare either a subsequent EIR or a supplement to an EIR would require approximately 12 to 18 months and cost approximately $2.5- to $4-million, including all costs for engineering concept development and environmental, public, and legal review.

2.5 Regulatory Requirements and Permitting

2.5.1 United States Army Corps of Engineers (ACOE)

Section 404 Permit (Clean Water Act of 1977)

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the United States (U.S.). Activities involving dredged or fill such as development, water resource projects, infrastructure, and mining projects are required to obtain a permit before dredged or fill material may be discharged into waters of the U.S.

The ACOE is responsible for issuing Section 404 Permits and they evaluate applications based on the environmental criteria set forth in the CWA Section 404(b)(1), U.S. Environmental Protection Agency (EPA) regulations, and the public interest. However, Section 404(e) of the CWA allows the ACOE to issue general permits for activities that have minimal individual and cumulative adverse environmental effects and are valid for up to five years. A nationwide permit is a general permit that authorizes activities across the country including mooring buoys, residential developments, utility lines, road crossings, mining activities, wetland and stream restoration activities, and commercial aquaculture. States also have a role in Section 404 Permit decisions through general permits issued for an entire State and water quality certifications.

Nationwide Permit 7 covers the permitting of outfall structures and associated intake structures, for which the six subsurface intake alternatives at all five alternative sites would qualify. A Nationwide Permit 7 could require 3 to 6 months to process and would require previous renewal of a NPDES permit. In this case, the discharge concentrate from the

desalination plant is comingled with the effluent from the El Estero WWTP and is currently regulated under a combined NPDES Permit No. CA0048143 for both facilities. This NPDES permit was last renewed in May 2015 and requires renewal every 5 years. Additionally, a CWA Section 401 Water Quality Certification from the State through RWQCB is required before the ACOE will issue a Nationwide Permit 7. The Section 401 Water Quality Certification process is discussed below in Section 3.5.5.2, but typically takes 3 to 6 months to be completed and can be processed in conjunction with the CWA Section 404 (Nationwide Permit 7). Navigational hazard considerations would also likely be addressed by the ACOE through a Section 10, Rivers and Harbors Act permit, described below.

Section 10 Permit (Rivers and Harbors Act of 1899)

Section 10 of the Rivers and Harbors Act regulates the construction of any structure in or over any navigable water of the U.S, from the smallest floating dock to the largest commercial undertaking. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction. The regulation also includes structures or work outside the limits defined for navigable waters of the U.S. if the structure or work affects the course, location, or condition of the water body. Additionally, Section 10 permits apply to any dredging or disposal of dredged material, excavation, filling, or any other modification of a navigable water of the U.S.

Section 10 is triggered concurrently with Section 404 when activities occur within a navigable waterway and the potential exists for a disruption to navigation. The six subsurface intake alternatives could result in modifications to navigable waters of the U.S., which could require permitting under Section 10 that could take 3 to 6 months. In particular the SIG alternative would alter the sea floor resulting in potential alterations to navigability and would be required to comply with Section 10 regulations. However, depending on their design and location, the various subsurface collector well alternatives (i.e., vertical wells, lateral beach wells, horizontal collector wells, slant wells, and HDD wells) may avoid construction activities, dredging, or filling in navigable waters of the U.S. and may not require a Section 10 permit.

2.5.2 United States Fish and Wildlife Service (USFWS)

Section 7 Consultation (Endangered Species Act [ESA], 16 USC 1536 et seq.)

The Endangered Species Act (ESA), 16 USC 1536 et seq., protects threatened and endangered plants and animals and their habitats. The U.S. Fish and Wildlife Service (USFWS) of the Department of the Interior and the National Marine Fisheries Service (NMFS) of the Department of Commerce implements the ESA at a national level. Generally, the NMFS manages marine species, while USFWS manages freshwater and land based species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers,

grasses, and trees. Anyone can petition USFWS or the NMFS to include a species on this list. The law prohibits any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited.

Section 7 of the ESA directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS or the NMFS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. A Section 7 consultation with the USFWS or NMFS will be required to determine any potential impacts to listed species. A Section 7 consultation may also be triggered through the CWA Section 404 permitting process where the USFWS and National Marine Fisheries Service (NMFS) are involved with evaluating impacts on fish and wildlife of all new Federal projects and Federally permitted projects, including projects subject to the requirements of Section 404 (pursuant to the Fish and Wildlife Coordination Act); and elevating specific cases or policy issues pursuant to Section 404(q) of the CWA.

In the context of a subsurface desalination plant intake project, the ESA must be observed for any potential impacts on listed species in the Pacific Ocean. The nearest State or Federal Marine Protected Areas in the vicinity of the alternative sites are Santa Cruz Island (approximately 14 miles), Anacapa Island (approximately 20 miles), Santa Rosa Island (approximately 25 miles), San Miguel Island (approximately 30 miles), and the Goleta Slough and Campus Point State Marine Conservation Areas (approximately 10 miles). However, tidewater Goby Mission Creek-Laguna Channel Critical Habitat Unit SB-11 is located on approximately 7 acres south of East Cabrillo Boulevard and east of Stearn's Wharf. While the six subsurface intake alternatives are designed not to allow entrance and subsequent loss of marine mammals and adult marine species, pumping operation of the subsurface intake alternatives utilizing wells (vertical wells, lateral beach wells, horizontal collector wells, slant wells, and HDD wells) in an area that could affect the hydrology and morphology of this critical habitat unit (e.g., Mission Creek-Laguna Channel) through drawdown of water levels would likely require a Section 7 consultation. Additionally, the implementation of these subsurface intake alternatives at the five alternative sites could result in construction related impacts to federally listed species or effects on their Critical Habitat that may require a Section 7 consultation depending on the location of pipelines, pump stations, and other facilities.

2.5.3 National Marine Fisheries Service (NMFS)

Magnuson-Stevens Fishery Conservation Management Act, Section 305 (B) 2-4

As part of the ACOE Section 404 permit application process, an assessment of Essential Fish Habitat (EFH), which is defined under the Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" could be required. NMFS is required to make EFH Conservation Recommendations to federal agencies if their actions would adversely impact EFH. Marine areas off the coast of the City

of Santa Barbara contain areas of EFH for various fish species, such as Krill, Finfish, Market Squid, Coastal Pelagic Species, and Groundfish. In particular the SIG and horizontal collector wells subsurface intake alternatives could affect EFH due to the large disturbance of seafloor and nearshore/onshore areas while the vertical wells, lateral beach wells, slant wells, and HDD wells may have be able to avoid larger impact areas depending on their design and location at each of the five alternative sites.

2.5.4 California State Lands Commission (CSLC)

Lease or Lease Amendment

The California State Lands Commission (CSLC) has jurisdiction and management control over approximately four million acres of land underlying the State's navigable and tidal waterways, including the State's tide and submerged lands along the California's 1,100 miles of coastline and offshore islands extending from the mean high tide line to three nautical miles offshore. The CSLC holds these lands for the benefit of all the people of the State, subject to the Public Trust for water related commerce, navigation, fisheries, recreation, open space and other recognized Public Trust uses. Accordingly, the CSLC maintains a multiple use management policy to assure the greatest possible public benefit is derived from these lands. The City maintains a lease with the CSLC for the desalination plant's intake and the El Estero Wastewater Plant Outfall (Agreement No. 19,055, PRC 4942.9). Any proposed modification to the intake for development of any of the six alternative subsurface intakes would require review of the existing lease and consultation with CSLC staff to determine the need for any lease amendments. However, as defined in the Work Plan for this study (Appendix A), the project sites have been limited to the areas extending one-half mile from the mean high tide line within the City's corporate limits as of 1937, were legislatively granted to the City of Santa Barbara by the State. Construction associated with any of the six subsurface intake alternatives at any of the five alternative sites, including future maintenance and repair activities, within the legislative grant area would not be subject to any authorization by the CSLC. Still, consultation with CSLC staff would be required.

2.5.5 State Water Resources Control Board (SWRCB)

2.5.5.1 Division of Drinking Water (DDW)

Domestic Water Supply Permit

Domestic Water Supply Permits are currently administered through the SWRCB Division of Drinking Water (DDW). The DDW is responsible for the issuance of permits for potable water systems, their sources and treatment, inspection of water systems, tracking of monitoring requirements of water systems to determine compliance, and enforcement actions governing these water systems. Domestic Water Supply Permits are issued by the SWRCB on a one-time basis, do not expire, and typically contain specific operating requirements. Amendments to Domestic Water Supply Permits are required if changes in

the water system occur. None of the following changes can occur unless a permit amendment has been issued:

- Change in ownership of the water system.
- The addition of new water sources (***note:*** a subsurface desalination plant intake would qualify as a new source).
- Any changes in the method of treatment.
- The addition of any storage reservoirs.
- A major expansion of the service area.
- Any change in the distribution system that does not comply with the waterworks standards.

At a minimum, construction of any of the subsurface intake alternatives at any of the alternative sites would require:

- That all state and federal drinking water regulations are met.
- An update to the desalination plant's water supply assessment with an analysis of the proposed source water's quality to established treatment requirements under the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) will be necessary for a subsurface intake at any of the alternative sites. This testing is required for any surface water intake or wells drawing from groundwaters under the influence of surface water (e.g., all subsurface intake wells). Thirty-six months of source water sampling from each subsurface intake well will be necessary to comply with this requirement and analytical and reporting costs will be approximately $300,000 per intake well.
- An amendment to the City's operation permit issued by DDW. The City received an operating permit for the desalination plant when it was first constructed in 1991 (Permit Amendment: 03-91-000) and this permit is currently being amended as part of the City's Charles Meyer Desalination Plant reactivation project.

2.5.5.2 Regional Water Quality Control Board (RWQCB)

National Pollution Discharge Elimination System (NPDES)

The 1972 amendments to the CWA provide the statutory basis for the NPDES permit program and the basic structure for regulating the discharge of pollutants from point sources to waters of the United States. CWA Section 402 requires the EPA to develop and implement the NPDES program. The CWA gives the EPA authority to set effluent limits on an industry-wide basis and on a water quality basis, which ensures protection of receiving

waters. Brine and other side-stream disposal from desalination plants are regulated as a point source of pollution through the NPDES Permit Program. The CWA allows the EPA to delegate authority to state governments, enabling states to perform many of the permitting, administrative, and enforcement aspects of the NPDES Program. In states that have been authorized to implement CWA programs, EPA still retains oversight responsibilities.

As specified in 40 CFR Section 124, a NPDES permit typically includes technology-based effluent limits, water quality-based effluent limits, monitoring requirements for each pollutant, and conditions on discharge operations. In California, the NPDES is enforced by the RWQCBs. NPDES permits almost exclusively regulate discharge of pollutants from point sources, such as industrial effluent from an outfall pipe or stormwater from a municipal storm system. This would also include brine discharge from the City's desalination plant, which in this case is comingled with the effluent from the El Estero Wastewater Treatment Plant (WWTP), and are currently regulated under a combined NPDES permit for both facilities. However, it is unlikely that any of the six subsurface intake alternatives would physically modify the characteristics of the brine discharged from the City's desalination plant and are therefore, not expected to require any modification to the City's existing combined desalination and El Estero WWTP NPDES permit.

General Construction Activity Storm Water Permit

Another area, besides brine disposal, that is governed by the RWQCB and the NDPES process is stormwater control during construction activities. For each of the six subsurface intake alternatives, the contractor hired by the City to complete the construction work would need to prepare the documentation for and comply with a construction phase NPDES permit. These permits are referred to as “general permits”. The City would submit a “general permit” application to the RWQCB, but the selected contractor would prepare the required notice of intent (NOI) to construct and prepare a stormwater pollution protection plan (SWPPP) as part of the application process.

Section 401 Water Quality Certification

A Section 401 Water Quality Certification is required for an ACOE Section 404 (Nationwide Permit 7) discharge permit for discharge into the waters of the United States (U.S.). The CWA Section 401(a)(1) states that "any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title." As such, construction of any of the six subsurface intake alternatives in any of the five potential sites would likely require a Section 401 Water Quality Certification.

Certification typically takes 3 to 6 months, and is processed in conjunction with the 404 (Nationwide Permit 7). The State issues the Section 401 certification, and the ACOE needs the certification as a pre-condition to authorizing activities under the Nationwide Permit 7.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code 13000, et seq.) is the principal legislation for controlling storm water pollutants in California. The act requires development of Water Quality Control Plans (also known as Basin Plans) for all drainage basins within California. Each Plan serves as a blueprint for protecting water quality within the various watersheds. These Basin Plans are used in turn to identify more specific controls for discharges (e.g., wastewater treatment plant effluent, urban runoff, and agriculture drainage). Under the Porter-Cologne Act, specific controls are implemented through permit requirements called Waste Discharge Requirements issued by the State's nine RWQCBs.

The five alternative sites for subsurface intake infrastructure are included within the Water Quality Control Plan for the Central Coast Basin, and thus are subject to all applicable rules and regulations contained within the Water Quality Control Plan for the Central Coast. The Waste Water Discharge Requirements permit would be required for any surface discharge not regulated by the NPDES, such as dewatering. It also should be noted that Section 13142.5(b) of the Water Code addresses larval fish entrainment from new or expanded ocean intakes that are used for cooling or industrial purposes. Since the six subsurface intake alternatives would be new, it is anticipated that this provision of the Water Code would apply and the City would be required to demonstrate that “the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.” Unless determined "not feasible," subsurface intakes are the required intake technology based on the Water Quality Control Plan for the Ocean Waters of California. Additional studies to evaluate feasibility in the context of Porter-Cologne Water Quality Control Act could be focused primarily on avoiding and mitigating the disturbance of sensitive habitats and sensitive species.[1]

2.5.6 California Coastal Commission

Coastal Development Permit

The California Coastal Commission (CCC) administers the Federal Coastal Zone Management Act. The most significant provisions of the Coastal Zone Management Act give the CCC regulatory control over all federal activities and federally licensed, permitted, or assisted activities if the activity affects coastal resources. The CCC retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands. The CCC also acts upon appeals from certain local government coastal permit decisions. The California Coastal Act includes several policies intended to protect

[1] California Ocean Plan, Desalination Amendments May 2015. Chapter III, Section M.2.d(1)(a).

water quality. Requirements include controlling runoff and waste discharges to protect water quality and preventing substantial interference with surface water flows in order to sustain biological productivity of coastal waters, and minimizing alteration of riparian habitats and streams.

The City of Santa Barbara has a certified Local Coastal Program and administers permits for on-shore areas within the Coastal Zone. Figure 3.1 presents State and local areas of coastal zone jurisdiction within the City. Facilities associated with the six subsurface intake alternatives at each of the five alternative sites would fall into either or both the City's “local coastal permit” area or beach and offshore facilities that are under the permanent jurisdiction of the CCC. Therefore, each alternative would require the City to obtain a Coastal Development Permit (CDP) either from the CCC or the City itself. Section 30601.3 of the Coastal Act authorizes the CCC to process a consolidated CDP application, which requires fewer approvals from the local government, when requested by the local government and approved by the Executive Director of the CCC, for projects that straddle jurisdictions of the CCC and a local government. A subsurface intake project could qualify for consideration of such a consolidated approval.

The City's desalination plant currently operates under an existing Coastal Development Permit (CDP Permit No. 4-96-119). The permit was issued by the CCC initially as a temporary facility, but later converted to a permanent CDP for operation of the desalination plant on a permanent basis in accordance with the City’s 1994 Long Term Water Supply Plan. The six subsurface intake alternatives at each of the five alternative sites fall into either or both areas of the City's jurisdiction and the beach/offshore retained jurisdiction areas governed by the CCC. A new CDP application is therefore required. Early consultation with the CCC to discuss approvals for areas of jurisdiction is recommended since the State has the authority to appeal for jurisdiction with areas administered by the City. When an approval process is agreed to, the City would submit a letter to the CCC detailing CDP application submittal requirements and compliance of the project submittal; a memorandum summarizing the environmental information and technical studies included in the submittal demonstrating compliance with applicable Coastal Act policies; Project Alternatives Analysis Summary (based on CEQA documentation); and a Coastal Act/Local Coastal Program policy consistency analysis. The CCC has a 30 day review period for the application submittal and may request additional project materials and environmental documentation that could result in additional 30 day review periods before providing a “completeness determination”.

The coastal permitting process is estimated to require two to six months, once the CEQA process has been completed. This permitting effort may cost between $100,000 and $400,000, including legal and other reviews.

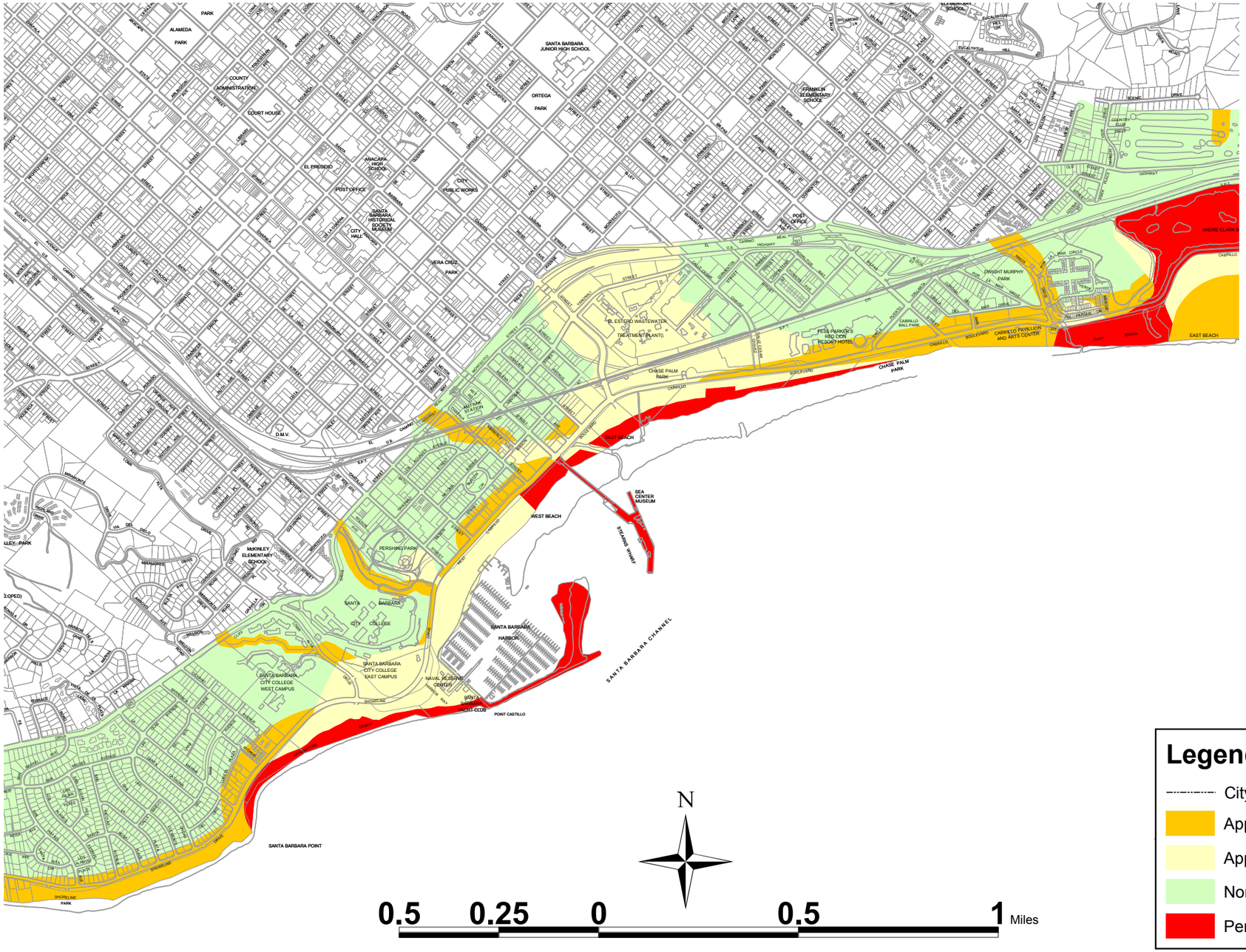

Figure 2.1 - Coastal Zone Areas of Jurisdiction

Coastal Zone Management Consistency Determination

The Federal Consistency Unit of the CCC implements the federal Coastal Zone Management Act (CZMA) of 1972 as it applies to federal activities, development projects, permits and licenses, and support to state and local governments. Upon certification of a state's coastal management program, all federal agency activities (including federal development projects, permits and licenses, and assistance to state and local governments) affecting the coastal zone must be consistent with the enforceable policies of the state's certified program. The review process used to implement this requirement is called a consistency determination for federal agency activities and development projects, and a consistency certification for federal permits and licenses, and/or federal support (i.e. funding) to state and local agencies. The six subsurface intake alternatives at each of the alternative sites would involve ACOE and USFWS permitting and regulations and would be required to comply with the CZMA.

2.5.7 California Department of Fish and Wildlife (CDFW)

Section 2080 & 2081 – Incidental Take Permit

The California Department of Fish and Wildlife (CDFW) implements the California Endangered Species Act (CESA). The CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. CDFW maintains a list of special status species within the state.

CDFW is always a trustee agency and must be notified when CEQA projects involve fish and wildlife of the state, rare, and endangered native plants, wildlife areas, and ecological reserves. As the trustee agency for fish and wildlife resources, the CDFW provides requisite biological expertise to review and comment upon CEQA documents, and makes recommendations regarding those resources held in trust for the people of California (Fish and Game Code Section 1802). CEQA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species. If any of the subsurface intake alternatives would affect a State listed species or any of the alternative sites contain a State listed species or Critical Habit compliance with Sections' 2080 and 2081 Incidental Take Permit would be necessary. Determination of impacts such as these will not be known until the CEQA process and associated biological resource studies commence.

Section 1602 – Streambed Alteration Agreement

The CDFW generally requires notification of activities related to altering streams, rivers, lakes. CDFW requires a Lake and Streambed Alteration (LSA) Agreement when it determines that the activity, as described in a complete LSA Notification, may substantially adversely affect existing fish or wildlife resources. An LSA Agreement includes measures

necessary to protect existing fish and wildlife resources. Depending on the design and location of the subsurface intake alternatives, a Section 1602 Streambed Alteration Agreement may be necessary.

2.5.8 Santa Barbara County Public Health Department

Water Well Permit Application

For each injection or production well required as part of a potable reuse alternative, a Well Drilling permit is required from Santa Barbara County, Public Health Department, Environmental Health Services (EHS). The permit is available on the County's website and is for the construction, modification, inactivation, and destruction of water wells as defined and regulated by the County Well Standards Ordinance. The procedures for completing a Water Well Permit application are as follows:

1. Application – Submit a completed application
2. Plot Plan – Submit a plot plan as part of the permit application. All setback distances from proposed well sites must be accurately depicted.
3. Site Evaluation – Following submittal of application, an EHS representative will conduct a site inspection of the proposed water well site.
4. Permit Issuance – Once determined to be satisfactory, the application may be approved. When approved and signed on the reverse side by the EHS representative, the application shall be considered a permit to perform the proposed work.

2.5.9 City of Santa Barbara

Local Coastal Development Permit

As discussed previously, depending upon the outcome of early consultation with the CCC, the City may administer their Certified Local Coastal Program to review and issue a Local Coastal Development Permit for the facilities associated with this project that are located with the City's Coastal Zone jurisdiction. The City will consult with the State early during the project to determine if the State would like to appeal for jurisdiction over the process, as is their option in accordance with the type of project being considered (i.e., major public works project). If the state declines jurisdiction, the City's Public Works Department would serve as the applicant and the City's Planning Department would review the application and administer the City's Local Coastal Program. This process may take four to six months and would begin as the environmental review process is nearing completion.

Building Permit Requirements

Construction of new well sites and onshore facilities, such as well head facilities and pump stations for the SIG and horizontal collection well subsurface intake alternatives would be required to comply with the City's local building permit regulations. Pertinent codes that

have been adopted by the City of Santa Barbara are summarized in the City's 2010 Adopting Ordinance:

- **California Building Code 2010** as published by the International Code Council (also known as Part 2 of Title 24 of the California Code of Regulations), including Appendix Chapters B, G, I and J
- **California Electrical Code 2010** as based on the 2008 National Electrical Code (also known as Part 3 of Title 24 of the California Code of Regulations)
- **California Mechanical Code 2010** as based on the 2009 Uniform Mechanical Code, as published by the International Association of Plumbing and Mechanical Officials (also known as Part 4 of Title 24 of the California Code of Regulations)
- **California Plumbing Code 2010** as based on the 2009 Uniform Plumbing Code, as published by the International Association of Plumbing and Mechanical Officials (also known as Part 5 of Title 24 of the California Code of Regulations), including the Installation Standards and Appendix Chapters G and K
- **California Energy Code 2010** as published by the International Code Council (also known as Part 6 of Title 24 of the California Code of Regulations)
- **California Historical Building Code 2010** as published by the International Code Council (also known as Part 8 of Title 24 of the California Code of Regulations)
- **California Existing Building Code 2010** as published by the International Code Council (also known as Part 10 of Title 24 of the California Code of Regulations)
- **California Green Building Code 2010** as published by the International Code Council (also known as Part 11 of Title 24 of the California Code of Regulations)

All modifications to the facilities will require a plan check from the City's Building Department prior to issuing a building permit. During construction, it is anticipated that the Building Department will provide occasional inspection of the facilities. The contractor will provide a certified Qualified Stormwater Practitioner (QSP) to prepare a construction phase SWPPP to be reviewed by the City. The QSP shall be responsible for all duties (e.g. monitoring, inspection, and sampling) required by the approved SWPPP and the latest version of the State of California General Construction Activity Stormwater Permit. The contractor will submit all required documents to the City for review.

The costs and schedule associated with the local permitting process generally are included in the design and construction phase activities.

APPENDIX A – SUBSURFACE INTAKE FEASIBILITY STUDY WORK PLAN