

EXHIBIT 4-A

**Implementation Plan for Water Project 3: Local Desalination at
Navy Property Located Near the Naval Support Activity, Monterey**

Work Plan Tasks

Task 1: In-House Specifications and Preliminary Constraints Analysis

Staff is to determine a proxy footprint for a 2 million gallon per day (mgd) Sea Water Reverse Osmosis (SWRO) desalting treatment plant and identify the ability to fit on site. A minimum of 4 mgd of feed water may be required (note: additional feedwater capacity would be required if 50% filter efficiency cannot be achieved). Identify expansion space, if any. Identify additional infrastructure required (see attached Figure 1 and Tables 1 and 2). Determine approximate power needs. Identify options for source water and brine discharge. Develop into summary document.

Meet with following to discuss initial project scope:

- U.S. Navy to discuss facilities layout and discuss a letter of intent
- California Coastal Commission to discuss set-backs and infrastructure
- Monterey Bay National Marine Sanctuary to discuss intake and discharge
- NOAA Fisheries to discuss intake and discharge
- Regional Water Quality Control Board to discuss intake and discharge

- California American Water to discuss infrastructure requirements
- California Department of Parks and Recreation to discuss land use limitations
- State Lands Commission to discuss intake and discharge

Additional agencies if a new pipeline is required for brine discharge to the Regional Treatment Plant owned by Monterey Regional Water Pollution Control Agency (MRWPCA):

- City of Sand City
- City of Seaside
- City of Marina
- MRWPCA

Develop a preliminary list of constraints based on meetings.

Budget: Internal

Timeline: 4-6 months

Task 2: Hydrostratigraphic Field Investigation

Two alternatives may be studied for intake source water and brine discharge: 1. an open ocean intake and discharge; 2. a Ranney collector and separate diffuser installed under the ocean seafloor. For the latter alternative, offshore hydrogeologic conditions need to be analyzed to determine the suitability for development of feedwater from under the seafloor in proximity to the Navy-owned site.

A 1990 hydrologic investigation performed by Staal, Gardner, and Dunne (SGD) for MPWMD concerning the coastal basin near the site showed that development of the inland coastal area as a brackish water source would be impractical. The potential for locating beach wells was also investigated. The thickness of sand overlying Monterey formation (shale beds) adjacent to the site was determined to be about 20 feet, with a yield per well of about 100 gallons per minute (gpm). A 4 mgd intake system would require approximately 30 wells spaced 200 feet apart to avoid interference. This would require just over one mile of beach front area for a well field. The beach front area from the Monterey Harbor to the City of Seaside includes the Monterey Municipal Beach, Del Monte Beach and Monterey State Beach. These are all popular recreation areas and some of the beach area is considered sensitive habitat that is host to plant and animal species protected under the Endangered Species Act. In addition to the long-term potential for coastal erosion, access to the beach to drill and maintain such a large number of wells could be problematic.

The 1990 SGD study did suggest that the District could consider a subsea intake system using a horizontal well placed just below the ocean floor. Analysis of the offshore undersea area must address the needs of the collection mechanisms and discharges identified in the specifications and constraints analysis. Results should identify favorable locations (e.g. ancient channels and/or areas with an adequate overlying thickness of sand), confirm intake yield sufficiency, and investigate the potential for discharging brine through a diffuser pipe located under the seafloor.

Comment [LH1]:

Budget: \$100,000 - \$125,000

Timeline: 4 months

Task 3: Develop Project Facilities Alternatives

A consulting engineer will be hired to develop conceptual layouts, sizing, and costs for prospective facilities, including seawater collection and disposal alternatives, transmission facilities required, treated water storage, and other appurtenant infrastructure.

Budget: \$50,000 - \$100,000

Timeline: 2 months

Task 4: Execute Constraints Analysis

Based on the identified concept designs, the consultant will evaluate each concept plan against 8 criteria:

- i) Technical Feasibility: Viability of source water production; hydrogeologic issues; brine disposal methodology; shoreline erosion.
- ii) Reliability: Is water supply sustainable?
- iii) Permitting: List permits and timeline. Foreseeable permit hurdles?
- iv) Public Acceptance: Is there organized opposition?
- v) Environmental: Energy usage; Impacts to Monterey Bay National Marine Sanctuary; etc.
- vi) Regulatory: Compliance with Seaside Basin Adjudication and CDO
- vii) Cost: Capital, operations, and cost per acre-foot.
- viii) Schedule: Project timeline and completion date

Land use issues will be detailed – primarily with the California Coastal Commission (CCC), State Lands Commission, the California Department of Parks and Recreation (DPR), the Department of the Navy, the City of Monterey and other agencies as required.

Feedwater collection, water treatment, and brine discharge constraints will likely include interaction with the NOAA Monterey Bay National Maritime Sanctuary (MBNMS), which adopted desalination facility siting guidelines in May 2010, the US Fish & Wildlife Service (FWS), National Marine Fisheries Service (NMFS), the CCC, State Lands Commission, California Department of Fish and Game (DFG), State Water Resources Control Board (SWRCB) for water quality under its Ocean Plan, and the Central Coast Regional Water Quality Control Board (RWQCB) through administration of discharge permits.

Other agencies include the County Department of Public Health (DPH) for well drilling, the Monterey Bay Unified Air Pollution Control District (MBUAPCD), and possibly the Monterey Regional Water Pollution Control Agency (MRWPCA) who will require brine characterization studies for its NPDES permit if their outfall is utilized.

Once constraints are identified, project alternatives will be screened and ranked, and a preferred alternative identified.

Budget: \$100,000 - \$125,000

Timeline: 4 months

Task 5: Develop Detailed Project Description

For the top 2-3 alternative concept designs, a consultant will identify and carry out additional field studies that are needed to further refine the project. A final project description will be prepared for the EIR, including site layout, source and discharge water facilities, pipelines and alignments, and connections to Cal-Am and Navy property (if appropriate). Cost estimates will be prepared.

If pilot testing is recommended, a detailed work plan will be developed and schedule revised.

Budget: \$40,000 - \$80,000
Timeline: 4 months

Task 6: Prepare Combined Environmental Impact Report/Environmental Impact Statement

Because the site is a federal facility, a NEPA Environmental Impact Statement (EIS) will be required and a combined EIS-EIR used to satisfy the CEQA process. Requirements for an EIS and EIR and their preparation may be considered to be similar, but additional time may be required.

It should be noted that development of a lease agreement with the Department of the Navy is anticipated to take approximately 18 months and would be carried out concurrently with the environmental analysis for the project.

Budget: \$250,000 - \$500,000
Timeline: 24 months

Task 7: Detailed Design and Construction Bid Documents

Assumed at 20% of construction.

Budget: \$11,200,000
Timeline: 24 months

Task 8: Permitting and Environmental

Budget: \$250,000 - \$500,000
Timeline: 24 months, overlaps with Detailed Design

Task 9: Construction and Start-Up

Use estimates from example projects until engineers are hired. Marina Coast water District estimated capital costs for 1,500 AF updated from 2007 report are \$42.2 million (*from "Desalination Facility Basis of Design Report", March 2007, RMC Water and Environment*)

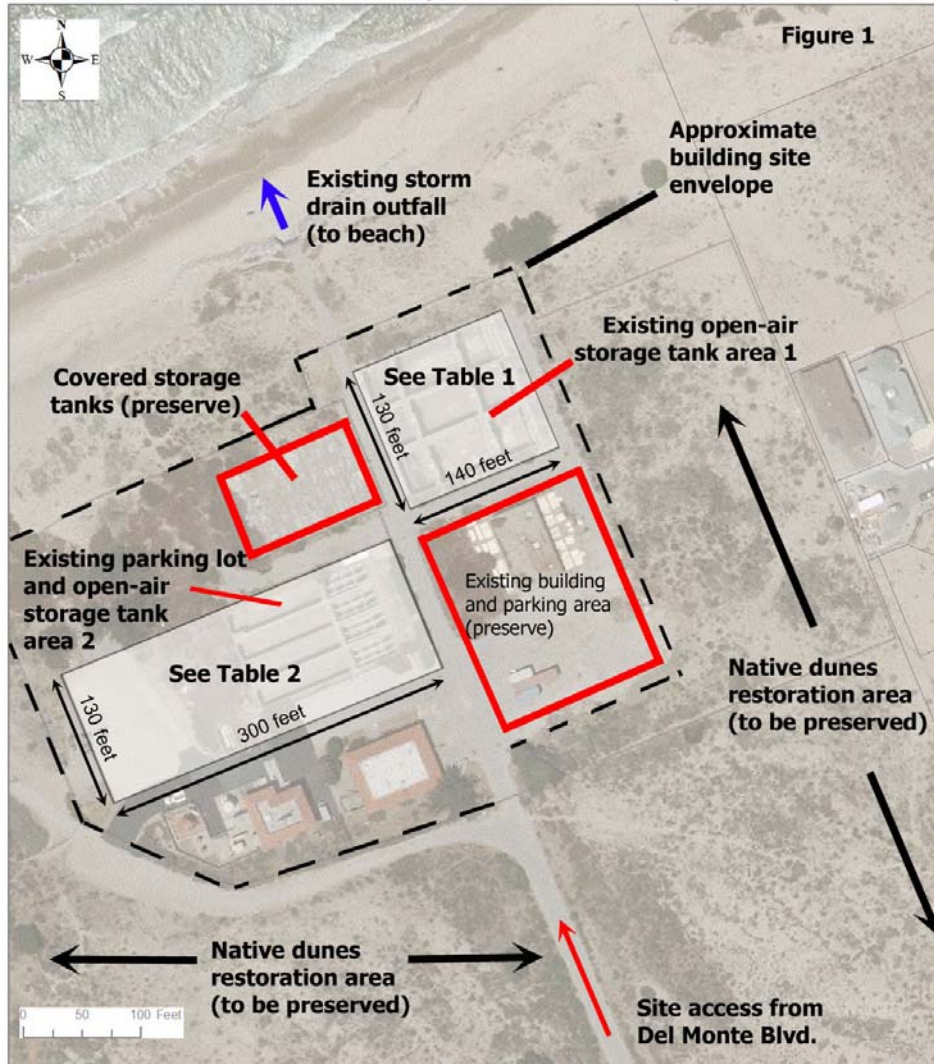
Budget: \$56,000,000
 Timeline: 30 months

Summary of Estimated Costs

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|--|------------------------------|
| Task 1: In-House Specifications and Preliminary Constraints Analysis | n/a |
| Task 2: Hydrostratigraphic Field Investigation | \$100,000 - \$125,000 |
| Task 3: Develop Project Facilities Alternatives | \$50,000 - \$100,000 |
| Task 4: Execute Constraints Analysis | \$100,000 - \$125,000 |
| Task 5: Develop Detailed Project Description | \$40,000 - \$80,000 |
| Task 6: Prepare Environmental Impact Report | <u>\$250,000 - \$500,000</u> |
| Total Preconstruction Costs | \$540,000 - \$930,000 |
| | |
| Task 7: Detailed Design and Construction Bid Documents | \$11,200,000 |
| Task 8: Permitting and Environmental | \$250,000 - \$500,000 |
| Task 9: Construction and Start-Up | <u>\$56,000,000</u> |
| Total Construction Costs | \$67,450,000 - \$67,700,000 |

Site Layout

MPWMD Water Project 3
Potential Seawater Desalination Project at Former Monterey Treatment Plant Site



November 2011
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Table 1 – Intake/Discharge and Solids Handling Facilities

- Intake and discharge pumps
- Solids clarifiers/tanks
- Sludge storage
- Pre-treatment/microfiltration
- Retention tank (for brine discharge)

Approximate area: 18,200 sq. ft. (130 ft. x140 ft.)

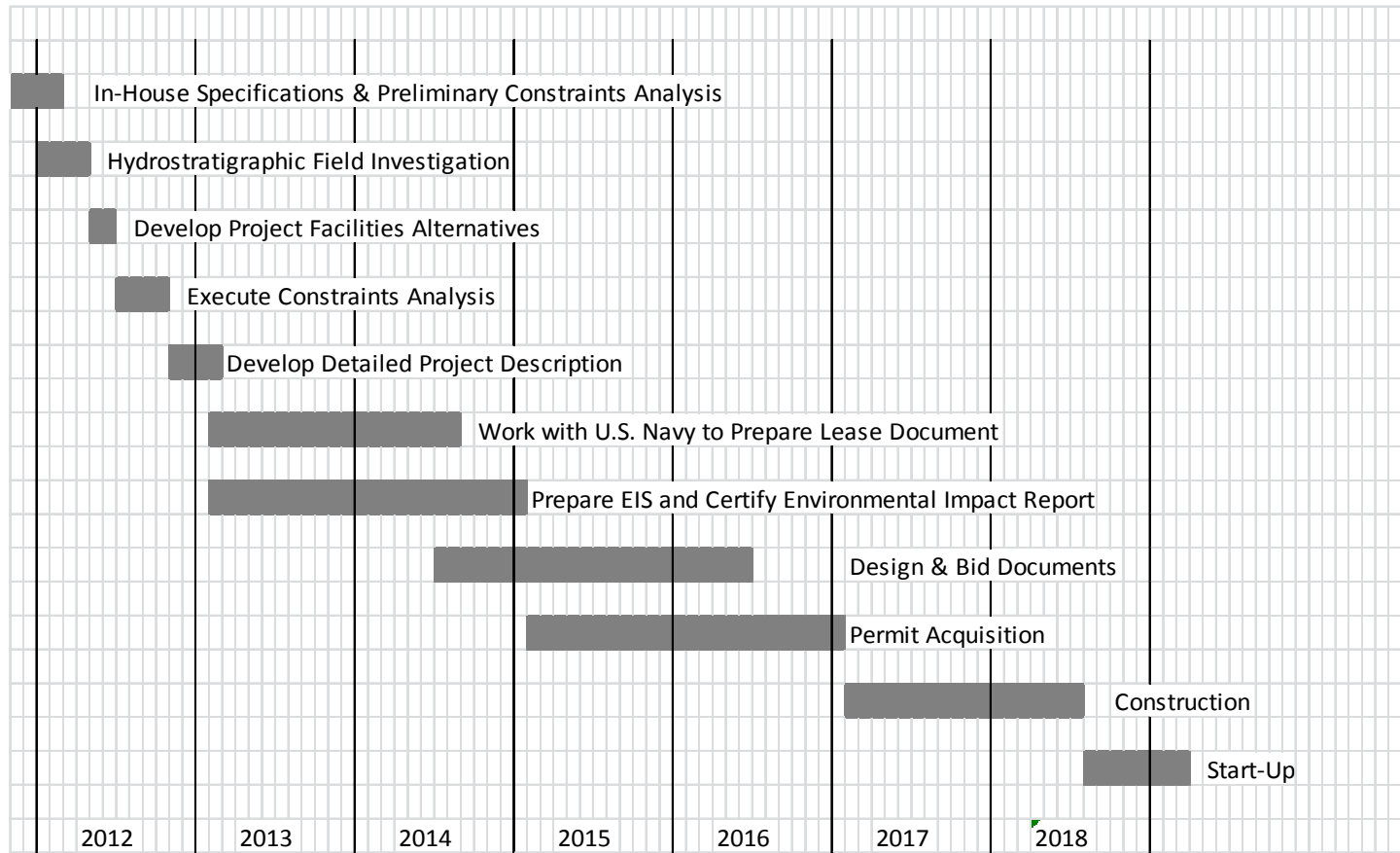
Table 2 – Reverse Osmosis Train and Clear Water Facilities

- RO feedwater and train
- Post treatment tank (clearwell)
- Chemical storage
- Office
- Laboratory
- Shop
- Electrical room
- Restroom

Approximate area: 39,000 sq. ft. (130 ft. x300 ft.)

Total Area = 57,200 sq. ft.

Estimated Timeline



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