Coquina Coast
seawater desalination project

Permit Requirements
Technical Memorandum

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Contents

List of Tables

List of Figures

Appendices

Summary of Acronyms

ASR	Aquifer Storage and recovery
CUP	Consumptive Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
EA	Environmental Assessment
EID	Environmental Information Document
EIS	Environmental Impact Statement
ERP	Environmental Resource Permit
ESWTR	Enhanced Surface Water Treatment Rule
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FONSI	Finding of No Significant Impact
MCL	Maximum Contaminant Limit
MFL	Minimum Flows and Levels
MGD	Million Gallons per Day
mg/l	milligrams per liter
MPRSA	Marine Protection, Research and Sanctuaries Act
NPDES	National Pollution Discharge Elimination System
NEPA	National Environmental Policy Act
NMFS	NOAA's National Marine Fisheries

NOAA,	National Oceanographic and Atmospheric Administration
NTU	Nephelometric Turbidity Units
PWS	Public Water System
RHA	River & Harbors Act
SWRO	Sea Water Reverse Osmosis
SWTR	Surface Water Treatment Rule
SJRWMD	St. Johns River Water Management District
TCUP	Temporary Consumptive Use Permit
TDS	Total Dissolved Solids
USACE	US Army Corp of Engineers
U.S.C.	United States Code
USCG	US Coast Guard
WHO	World Health Organization

Executive Summary

The Coquina Coast Project Partners are currently operating under Consumptive Use Permits, which indicate that current water use is close to authorized permit allocations. Recent permit renewals approved by St. Johns River Water Management District provide that the applicants must proceed to develop alternative water supply sources to be used to meet a portion of future demands. In an effort to meet increasing water demands and address limitations in future groundwater usage, the cities of Palm Coast, Leesburg, Deland and St. Johns County are working with the St. Johns River Water Management District to evaluate seawater desalination as a potential future alternative source of drinking water for the region.

This purpose of this technical memorandum is to outline specific agency requirements for each specific permit needed to implement the Coquina Coast Desalination Project. A lengthy and extensive permitting process designed to protect Florida's natural resources is required to construct and operate a desalination facility. This technical memorandum summarizes the outcomes of project specific meetings and discussions with permitting agencies that would be involved in the final permitting of the project.

The Coquina Coast Project will likely fall under the requirements of the National Environmental Policy Act based on one or more of the following scenarios:

- A US Environmental Protection Agency (USEPA) decision to enable funding under the Special Appropriations Act Project program for water infrastructure projects.
- A decision by the U.S. Army Corps of Engineers to issue a Section 10/404 permit for dredge and fill operations in waters of the United States with potentially significant environmental impacts.
- Application for a concentrate discharge permit beyond 3 miles offshore, which would be permitted by USEPA (as opposed to Florida Department of Environmental Protection).

At the outset, this will likely require an initial Environmental Information Document to be prepared for the Coquina Coast Project, should the requirement be triggered by a Federal agency. This may lead to a more detailed Environmental Assessment or Environmental Impact Statement, if significant environmental impacts are foreseen.

The Florida Department of Environmental Protection will be lead agency for issuance of an Environmental Resource Permit and a National Pollution Discharge Elimination

System Permit. These permits will be issued upon confirmation that the Coquina Coast Project poses no adverse affects to the waters of the United States or life (human, animal or marine), under the Clean Water Act and Endangered Species Act respectively. Should the project go forward, the Environmental Resource Permit application package will be reviewed concurrently by the Florida Department of Environmental Protection, and US Army Corps of Engineers for compliance review of potential dredge and fill and construction activities in US waters under Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act. Hydrodynamic data collection and model simulation, and marine studies, will be required for supporting information in the permit application under the National Pollution Discharge Elimination System.

Based on initial discussions, St. Johns River Water Management District has indicated its intention to require a Consumptive Use Permit application for withdrawal of source water, either from an open sea intake within 3 miles of the shoreline, or from a beach well system. The source water is considered an infinite resource, which should pose no constraints to permit compliance requirements. Should an open sea intake be selected that extends beyond 3 miles of the shoreline into federal waters, a Consumptive Use Permit is not anticipated to be required.

Construction of the Coquina Coast Project will require one or more applications for a Specific Permit to Construct Public Water System Components, which will be reviewed by Florida Department of Environmental Protection. Additional permits relating to zoning and right-of way use will be required by county or city departments.

The time frame for completion of the permitting process is likely to extend a minimum period of three years from the notice to proceed with preliminary designs under Phase 2B of the Coquina Coast Project.

1. Background

1.1. Introduction

The City of Palm Coast, which also supplies all potable water to the service areas of unincorporated Flagler County, entered into a memorandum of understanding in 2006 with all service providers in the County to investigate alternative water sources. The resulting County Water Supply Plan, 2007, proposed that seawater desalination presented the preferred option for alternative water supplies having minimal political or technical issues to overcome. The Flagler County Water Supply Facilities Work Plan, 2010, reiterated this view for the unincorporated County service areas.

The Coquina Coast Seawater Desalination Alternative Water Supply Project, hereinafter referred to as the Coquina Coast Project, currently includes two Supplier utilities (the Cities of Palm Coast and Leesburg), and two "Ex Officio" utilities (the City of DeLand and St. Johns County). In an effort to meet increasing water demands and address limitations in future groundwater usage, these entities, known collectively as "the Partners", together with the St. Johns River Water Management District (SJRWMD), are evaluating seawater desalination as a potential future alternative source of drinking water for the region.

Consumptive Use Permits, under which the Partners are operating, indicate that current water use is close to authorized permit allocations. A condition of the permit renewals for Leesburg and DeLand provides that the cities must develop alternative water supply sources to be used to meet a portion of future demands. Similar conditions are likely to be included in permit renewals currently being sought by Palm Coast and St. Johns County.

1.2. Purpose of Technical Memorandum

The Phase 1 Coquina Coast Project Recommended Projects Report included a section on preliminary permitting requirements. The purpose of this technical memorandum is to outline more specific agency requirements for each specific permit and to summarize the outcomes of meetings and discussions with permitting agencies that would have involvement in the final permitting of the Project. The meetings that were convened included:

- Discussions with the US Environmental Protection Agency (USEPA), District 4 National Environmental Policy Act (NEPA) Program Office, to indicate the possible level of project documentation and assessment (Environmental

Assessment vs. Environmental Impact Statement) necessary to satisfy NEPA as well as surface any technical, procedural or funding issues.

- Meetings with Florida Department of Environmental Protection (FDEP) and US Army Corp of Engineers (USACE) to discuss Environmental Resource Permit (ERP), and National Pollution Discharge Elimination System (NPDES) permitting requirements.
- A meeting with SJRWMD to discuss requirements for Consumptive Use Permits (CUP) and well construction permits.
- Independent discussions with USACE, US Coast Guard (USCG), Waterways Management Division, and National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) to determine possible constraints to construction of intake and discharge structures on the ocean floor.

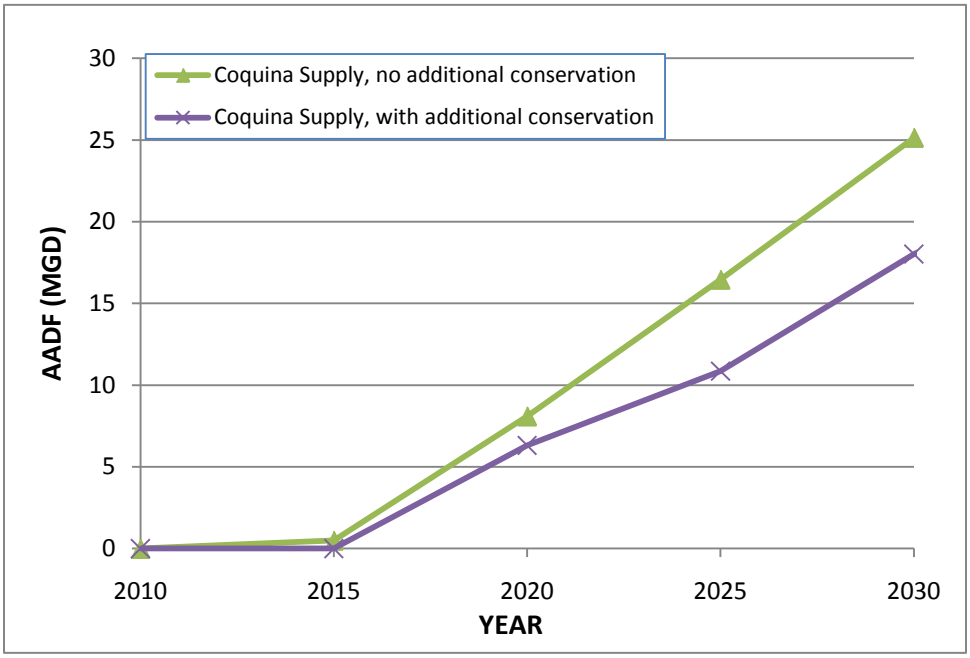
Meeting minutes, which were previously distributed to the Partners, are appended to this memorandum for reference.

2. Project Overview

2.1. Demand and Water Quality Requirements

The potential growth in demand from the Coquina Coast Project as projected by the Partners, with input from SJRWMD pilot conservation study, was presented in Phase 2A report "Project Demand Side Management and Conservation". Figure 2.1 summarizes the data to year 2030, assuming participation by the current four Partners. The demand projections will be further defined in Phase 2B of the project.

Figure 2.1 Demand Projections from Coquina Coast Project



Seawater desalination produces some of the highest quality drinking water in the world. The treatment process of the proposed desalination facility will be designed to meet all established National Primary and Secondary Drinking Water Standards. In addition, several other water quality objectives have been established for currently unregulated parameters or those that are more stringent than current regulatory standards. Treated water must also be stable, non-corrosive and suitable for transmission to each of the Partners with an adequate and appropriate disinfectant residual. Table 2.1 summarizes the principal water quality goals for the product water.

Table 2.1 Finished Water Quality Goals

Water Quality Parameter or Category	Desalination Plant Finished Water Goal	Notes
Pathogens		
Cryptosporidium	3-log (99.9%) reduction	LT2ESWTR requirements
Giardia	3-log (99.9%) reduction	SWTR requirements
Viruses	4-log (99.99%) reduction	SWTR requirements
Turbidity		
Filtration process – with **media pre-filtration**	≤ 0.3 NTU (95% of samples) ≤ 1 NTU (all samples)	IESWTR requirements
Filtration process – with **membrane pre-filtration**	Cannot exceed 0.15 NTU for more than 15 minutes	LT2ESWTR requirements for membrane processes
Disinfectants		
Free chlorine	< 4.0 mg/L	plant effluent
Disinfection Byproducts		
Total trihalomethanes (TTHMs)	< 0.040 mg/L	50% of the MCL
Haloacetic acids (HAA5)	< 0.030 mg/L	50% of the MCL
Chlorite	< 0.8 mg/L	80% of the MCL
Bromate	< 0.008 mg/L	80% of the MCL
Other Regulated Water Quality Categories		
Sodium	< 80 mg/l	50% of the MCL (dietary concerns)
Other inorganic contaminants	FDEP MCLs	
Organic contaminants	FDEP MCLs	
Radionuclides	FDEP MCLs	
Secondary Standards		
pH	7.5	
Total dissolved solids	< 250 mg/L	50% of the MCL
Other secondary parameters	FDEP MCLs	
Unregulated Parameters		
Calcium carbonate precipitation potential	> 0 mg/L (minimum) 4 – 10 mg/L (target)	
Langelier saturation index	> 0 (minimum) > 0.2 (target)	
Boron	< 2.0 mg/L	80% WHO guideline* (July 2011)
Bromide	<0.3 mg/L	

Notes: * The WHO Guidelines 4th edition, increasing the boron guidance level to 2.4 mg/l, set for release July 2011.

Goals presented in Table 2.1, for water quality before blending with the Partner's existing supplies, include references to certain specific contaminants of concern that are normally found in seawater.

2.2. Intake

The seawater source for the Coquina Coast Project will be from either an open ocean intake or several beach wells, depending on initial capacity requirements and results of hydrogeological investigations. Phase I design production capacity is estimated to lie in the range 10 to 25 MGD by 2030, depending on Partner participation and water demand projections. At this time, build-out capacity is assumed to be up to 50 MGD. Table 2.2 shows the estimated intake quantities associated with various treatment plant production capacities, based on 45% membrane recovery. Plant design capacities will be determined in Phase 2B.

Table 2.2 Intake Capacity Requirements

Plant Capacity MGD	10	15	20	25	50
Intake Flow MGD	24	36	48	60	120

2.3. Treatment Process

Seawater intake type and raw water quality will significantly impact pretreatment requirements. Processes will be selected from a combination of screening, coagulation and flocculation, clarification (likely for ocean intake only), and filtration (media or membrane).

The ultimate objective of the seawater reverse osmosis (SWRO) process is to produce desalinated water that will meet the finished water quality goals presented in table 2.1. Pilot testing will be conducted in Phase 2B to better determine SWRO process requirements, for example, whether a partial second-pass or two-pass system will be needed to improve salt, bromide, or boron rejection. The SWRO process reduces total dissolved solids (TDS) by about 99.3 percent producing permeate (RO product water) that is very low in mineral content. Although the low levels of constituents such as sodium may be beneficial for health reasons, the water is deficient in important minerals such as calcium, magnesium, and sulfate, as well as alkalinity. As such, it is necessary to re-mineralize and stabilize the water to reduce corrosion potential prior to transmission and distribution. Disinfection will be by chlorine for blending compatibility with Partner's existing drinking water supplies.

2.4. Concentrate Discharge

Estimated concentrate discharge capacities, based on 45% membrane recovery, are shown in table 2.3 for various treatment plant production capacities.

Table 2.3 Discharge Capacity Requirements

Plant Capacity MGD	10	15	20	25	50
Discharge Flow MGD	14	21	28	35	70

Raw water quality is currently based on analyses provided by Marineland Dolphin Conservation Center, and a Water Research Foundation project being completed by the project team to establish typical seawater quality data. Table 2.4 summarizes the data collected, and corresponding estimates for project intake and discharge water qualities. Further testing will be undertaken in Phase 2B of the project.

Table 2.4 Water Quality Assumptions

Parameter	Marineland	Water Research Foundation	Design Project Source Water	* Estimated Project Concentrate
pH	8.1	8.3	8	7.5
Temperature (°C)	--	--	10 - 35	10 - 35
TDS (mg/L)	--	34,500	36,000	65,000
Chloride (mg/L)	20,200	19,000	20,000	36,000
Bromide (mg/L)	67	65	70	130
Calcium (mg/L)	312	400	400	750
Magnesium (mg/L)	1,320	1,300	1,300	2,400
Sodium (mg/L)	10,650	10,600	10,600	19,500
Silica (mg/L)	0.6	<10	5	9
Strontium (mg/L)	5.9	13	10	18
Boron (mg/L)	--	4.6	4.5	9

Note * Assumes 45% membrane recovery

2.5. Summary of Permit Requirements

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the

environmental impacts of their proposed actions and reasonable alternatives to those actions. To meet this requirement, federal agencies may be required to prepare either a an Environmental Assessment (EA) or Environmental Impact Statement (EIS) to satisfy the requirements of NEPA. The US Environmental Protection Agency (USEPA) also reviews and comments on EAs or EISs prepared by other federal agencies, in addition to ensuring that its own actions comply with NEPA.

Section 402 of the Clean Water Act applies to all discharges that can potentially cause pollution of waters of the United States. Section 401 of the Act requires that discharges are certified to have no adverse water quality impacts. Compliance with these sections is a prerequisite of permit issuance under the National Pollutant Discharge Elimination System (NPDES).

Under Section 404 of the Clean Water Act (33 U.S.C. 1344), the USACE has regulatory jurisdiction over the deposition of dredged or fill material in all waters of the United States. After notice and opportunity for public hearings, the USACE is authorized to issue permits for the discharge of dredged or fill material into waters of the United States at specified disposal sites. The Corps authority under Section 404 includes freshwater and tidal wetlands as well as tributaries to the broader “navigable” waters.

Section 316(b) of the Clean Water Act requires the USEPA to ensure that the location, design, construction and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. This rule applies to new electric generating plants and manufacturers that withdraw more than two million gallons per day (MGD) from waters of the U.S., if they use 25% or more of their intake water for cooling. This portion of the Clean Water Act is designed to minimize impingement and entrainment of fish and shellfish at cooling water intakes. The Act was specifically promulgated for cooling water intakes, but the Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District (SJRWMD) have indicated that it will apply to other seawater intakes, and that requirements to minimize and mitigate impingement and entrainment of marine life will be included in the NPDES approval process.

In 1972 Congress passed the Coastal Zone Management Act (CZMA) to assist coastal states with the development of state coastal management programs, and comprehensively manage and balance competing uses and impacts to coastal resources. Federal CZMA consistency is required for any federal activity affecting any land or water use, or natural resource of the coastal zone to ensure the activities are consistent with the enforceable policies of the state’s federally approved coastal management program. Compliance with this act is required for issuance of an Environmental Resource Permit (ERP).

Section 10 of the Rivers and Harbors Act (33 U.S.C. 403), prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the USACE Chief of Engineers and authorized by the Secretary of the Army.

The consumptive use of water under State of Florida jurisdiction is regulated under Chapter 373, Florida Statutes (F.S). Waters of the state are generally defined as any and all water on or beneath the surface of the ground and coastal waters within the jurisdiction of the state. Permits are issued by the regional water management district; in this case the SJRWMD.

The Endangered Species Act (ESA) provides for the protection of threatened or endangered species and the ecosystems on which they depend throughout all or a significant portion of their range. NOAA's National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS) share the responsibility for implementing the ESA with the USFWS managing land and fresh water species while the NMFS manages marine species. The NMFS reviews coastal construction activities that may impact essential fish habitat. The ERP process includes verification of compliance with this act.

Under the Magnuson-Stevens Fishery Conservation and Management Act, the Secretary of Commerce and Fishery Management Council has authority under Public Law 104-208 to protect essential fish habitat Federal agencies are required to consult with the National Marine Fisheries Service (NMFS) for activities that are funded, permitted, or carried out that may adversely affect essential fish habitat. These consultations are included in the ERP process.

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects that their federally funded activities and programs have on significant historic properties. "Significant historic properties" are those properties that are included in, or eligible for, the National Register of Historic Places. The National Register is a list of districts, sites, buildings, structures, shipwrecks and objects that are significant in American history, architecture, archeology, and culture.

Table 2.5 summarizes the permits required, together with agency involvement, that are envisaged for the Coquina Coast Project.

Table 2.5 Summary of Primary Permit Requirements

Possible Permits	Applicable Components	Lead Agency	Consulting Agencies
ERP	Intake, Discharge, Treatment Plant,	FDEP/ USEPA	NMFS, USFWS
Department of Army Permits*	Intake & Discharge	USACE	USCG
PWS Construction	Water Treatment Plant	FDEP	
NPDES	Concentrate Discharge	FDEP/ USEPA	NMFS, USFWS
CUP	Water source	SJRWMD	FDEP
Well Construction	Production and Monitor Wells	SJRWMD	County of project location
Wastewater Disposal	Wastewater transmission (membrane cleaning and domestic wastes etc)	County Health Department or FDEP	-
Land Development	Treatment Plant (zoning, stormwater management, landscaping etc)	County or City of project location	-
Right-of-way Use	On-shore pipelines within right-of-way	County or City of project location	FDOT

Note ; * These Department of Army permits include CWA Section 404 and RHA Section 10, and are coordinated with the ERP process

3. National Environmental Policy Act

3.1. Applicability

The National Environmental Policy Act is our basic national charter for protection of the environment. It establishes policy, sets goals, and provides means for carrying out the policy" (40 C.F.R. §1500.1(a)). All federal agencies are bound to NEPA and must satisfy all the applicable requirements of NEPA in the administration of their programs and policies.

Two of the more likely NEPA scenarios or triggers applicable to the Coquina Coast Project are described below. One involves a USEPA decision for Appropriations Act funding; the other, a decision by the U.S. Army Corps of Engineers to issue a permit for filling waters of the United States. Only one will require fulfillment of NEPA, not both. Both are described below only to layout out the possibilities and address the NEPA compliance question. If neither of these scenarios is borne out, NEPA would not be triggered for the Coquina Coast Project unless some other federal permit or decision was required for the project.

The first and most likely trigger for NEPA applicable to the project involves submitting an application to the U.S. Environmental Protection Agency for matching funding under what's known as the Special Appropriations Act Project (SAAPs) program for water infrastructure projects. The SAAP funding or grant process has its own procedures, one of which is for the applicant, following submittal of a grant application, to prepare an Environmental Information Document for USEPA review. The EID and NEPA grant funding process is described in more detail below.

The second less likely scenario assumes federal SAAP matching funds are not sought for whatever reason. Regardless of funding, the project will require federal and state permits to construct and operate. One of the most important federal permits required is for filling and construction in waters of the United States (e.g. intake/outfall). The decision by the U.S. Army Corps of Engineers to issue an Individual Permit pursuant to Section 404 of the Federal Clean Water Act can, in rare cases, be controversial and elevate the need for a NEPA Environmental Assessment (EA) or Environmental Impact Statement EIS to accompany the permit application. This scenario is presented herein to describe how NEPA may apply to the Coquina Coast Project.

3.2. Environmental Information Document

The following discussion of an EID, which is specific to SAAP projects, assumes that the Suppliers have or will file for a federal grant with USEPA and/or the state clearinghouse and that grant discussions have or will happen in the near future. For context on the EID as well as the EA and EIS, the following six phases outline the typical USEPA Region 4 SAAP grant process:

- Phase 1 – President signs appropriations bill containing specific project awards for given fiscal year.
- Phase 2 – USEPA contacts Grantee and works with USEPA to define project scope; Grantee prepares and submits grant application; grant awarded for planning or construction.
- Phase 3 – Grantee selects engineer and develops Preliminary Engineering Report; Grantee requests the USEPA include project on Region 4 Priority Funding List.
- Phase 4 – USEPA makes a determination of whether project qualifies under NEPA for a Categorical Exclusion (our opinion is that the Coquina Coast Project will not); if no Categorical Exclusion, Grantee prepares a Draft EID with public participation; Grantee submits Draft EID to USEPA inclusive of feedback/ documentation from involved "cross-cutter" federal agencies/representatives (e.g., USACE, NMFS, USFWS, and State Historic Preservations Office; USEPA reviews and comments on Draft EID; Grantee holds public meetings/hearings as necessary and revises the Draft EID; USEPA makes "environmental determination" (determination can be either no significant impact or potential for a significant impact); if no significant impact, USEPA prepares an Environmental Assessment (EA) and renders a Finding of No Significant Impact or FONSI; if significant impacts are envisioned at the conclusion of the EID, USEPA can bypass the EA step and proceed directly to an Environmental Impact Statement which concludes in a Record of Decision USEPA at the conclusion of the EA or EIS awards/amends grant for construction.
- Phase 5 – plans and specs prepared/reviewed; bids advertised and preliminarily awarded; Grantee submits bid documents to USEPA for review; USEPA issues notice to proceed and Grantee awards bids; construction completed.
- Phase 6 – Grantee issues final documentation to USEPA and grant is closed out.

Picking up with Phase 4 above, the EID by its nature is intended to be a summary document based upon readily available information. The document is meant to inform USEPA and the public about the project, including a description of the proposed project, project need, existing environment, and, as applicable, any existing drinking water and wastewater systems affected by the grant project. The EID also includes an analysis of the environmental impacts of the proposed project and its reasonable alternatives, including the "no action" alternative. USEPA's regulations implementing NEPA require grant applicants to submit an EID for their project unless USEPA has determined that the project either is eligible for a Categorical Exclusion or will require an EIS. The scope of the EID is usually tailored to the size and magnitude of the proposed project. The more complex the project and significance of environmental impacts, the more detailed the EID must be. A typical schedule for an EID is four to six months, which can vary based on complexity and controversy. The EID schedule for the Coquina Coast Project could be longer than for a typical project.

Regardless of the project's complexity, there are pre-requisite components of an EID that can vary slightly by USEPA region. USEPA recommends applicants consult with their regional point of contact on the scope of the EID they will need to prepare as well as the grant process. A "typical" EID outline is as follows:

- Executive Summary
- Proposed Project & Funding Status
- Description of the Existing Environment
- Description of the Existing System (in this case drinking water)
- Purpose & Need for the Proposed Project
- Analysis of Alternatives
  - No Action
  - Alternative A, B, C etc.
  - Preferred Alternative (if known)
- Environmental Consequences & Mitigation Measures for Preferred Alternative
  - Direct, Indirect, Cumulative
  - Mitigation
  - Crosscutting regulatory and permitting
  - Inter-municipal agreements
- Public Participation
- Preparers
- Consultations

- Appendices

Thus, the EID is a key decision-making tool for USEPA in considering an applicant's grant application. More specifically, it's the point in the process where the USEPA (with cross-cutter agency input and feedback from the public) makes its "environmental determination" under NEPA:

1. Determination that no significant environmental impacts are found or anticipated; USEPA prepares an Environmental Assessment to document Finding of No Significant Impact (FONSI); or
2. Determination that the project has the potential for significant environmental impacts; USEPA prepares an Environmental Impact Statement and Record of Decision.

Note that at the conclusion of the EID, USEPA can "jump" right to an EIS and bypass the EA and FONSI step. The details and difference of an EA versus an EIS are provided in the following sections.

3.3. Environmental Assessment

The purpose of a NEPA Environmental Assessment is to provide sufficient evidence and analysis to USEPA (the lead agency in the case of SAAP projects; the Corps in the case of a Section 404 permit) for determining whether to prepare a FONSI or EIS (40 C.F.R. § 1508.9).

As stated earlier, USEPA has the legal obligation to issue a NEPA document for SAAP projects, to approve NEPA determinations, and to fulfill other cross-cutter federal requirements before approving or funding for design or construction. The EID as described above is a pre-requisite step in the case of SAAP grant projects and lays the foundation for the formal NEPA process. An EA is meant to be concise public document that provides sufficient evidence and analysis for USEPA to determine whether to issue either a FONSI or a notice of intent to prepare an EIS. USEPA's decision to finalize and issue the EA and FONSI or to move forward with the EIS process is based on whether or not the project will have significant impacts. If the Coquina Coast Project were to require an EA, our opinion is that the EID could be expanded as necessary to fulfill the requirements of an EA especially given the fact that the EID and EA content are very similar.

According to SAAP guidance, issuing an EA (and FONSI, if applicable) is the regulatory responsibility of USEPA with the applicant's role limited to developing the EID. As stated above, information gathered and compiled in the EID is used to prepare the EA so

the more complete and "robust" the EID, the faster USEPA can process the EA. As an alternative pursuant to 40 CFR § 6.303, SAAP guidance indicates that the grant applicant, in consultation with USEPA, may prepare a Draft EA instead of an EID via a third-party agreement or with the grant applicant's resources. Note that in a NEPA third-party agreement situation, the USEPA and the applicant agree to retain an independent "third-party" to prepare the NEPA document under the direction of the USEPA project manager. It is important to note that according to SAAP guidance, grant funds may not be used to prepare a federal agency document, such as a Draft EA, but may be used to prepare the EID. If the applicant chooses to prepare a Draft EA, the applicant needs to pay for the Draft EA with its own funds. Where the grant applicant prepares the Draft EA, USEPA is responsible for the content and accuracy of the Draft EA and finalizing the EA process. By responsibility this means USEPA in the role as lead federal agency for NEPA. However, to ensure that milestones are met, the Grantee must work very closely with the agency, and all outside third party preparers (if any) to not just push the schedule along, but to ensure the project is accurately represented throughout the process.

Note that SAAP guidance states that preparing an EA is not necessary for cases in which USEPA has already determined that an EIS will be prepared. The framework of an EA is based on site-specific proposed actions, such as size, scope, and level of detail for each effect. The EA is tailored to the project's environmental resources, such as presence of or potential for endangered species, essential fish habitat, coral reefs, shell-fish areas, wild and scenic rivers, coastal zones, seismic areas, floodplains, prime farmland, and others. A "typical" EA outline is as follows:

- Executive Summary
- Purpose & Need for the Proposed Action
- Description of the Proposed Action
- Alternatives considered (including the no-action alternative)
- Affected Environment (including baseline conditions)
- Environmental Consequences of the proposed action and alternatives
- Mitigation Measures (including mechanisms such as special grant conditions needed to ensure that mitigation is carried out)
- Consultations (agencies, persons)
- Appendices

If an EA is prepared for the Coquina Coast Project, the USEPA must make a final determination. One determination could be a FONSI. A FONSI is a federal agency document that briefly presents the reasons why an action, not otherwise excluded (§

1508.4) from NEPA review, will not have a significant effect on the environment and for which an EIS will not be prepared (40 C.F.R. § 1508.13). A FONSI has a 30-day public comment period before the action can be undertaken. A typical schedule for an EA is six (6) to nine (9) months. In the case of a determination that a significant impact will result, USEPA can direct that instead, an EIS be prepared.

One final note is that while the USEPA "prepares" the EA (or EIS in the case below) it is actually the Grantee that is responsible for the work and the cost by third party as a consequence of the process and practice of USEPA. A third party in the NEPA context is an independent preparer that works with Grantee and the USEPA project manager to assemble the NEPA documentation under USEPA direction.

3.4. Environmental Impact Statement

An Environmental Impact Statement "means a detailed written statement as required by section 102(2)(C) of [NEPA]" (40 C.F.R. § 1508.11). It is a detailed document that is required if a federal action is likely to have significant impacts on the environment. Because the potential for significant impacts exists, an EIS presents an evaluation of a proposed action, reasonable alternatives, impacts and mitigation in greater detail than an EA. An EIS also has other procedural requirements, like mandated public notifications, public scoping, public meetings and/or hearings, preparation of a Final EIS responsive to public comments, preparation of a findings statement and execution of a Record of Decision. Not only do these result in a far more complicated and involved document but the schedule for completing an EIS is protracted well beyond an EID or EA. A typical schedule for an EIS is from 12 to 18 months. It is not uncommon for high profile projects to take from 18 to 36 months to complete.

As stated earlier, USEPA prepares an EIS when it is determined that there are likely to be significant impacts from a proposed SAAP project. USEPA initiates the process, conducts the scoping effort, prepares the EIS documents (preliminary, draft and final), coordinates the cross-cutter and public review process, and finalizes EIS and NEPA process with a Record of Decision. Recall that if USEPA determines that a proposed project may have a potentially significant impact on the human environment and that mitigation of the impacts may not be possible at the EID stage, the preparation of an EA is not necessary and USEPA can jump right to the EIS.

For SAAP grants related to construction, USEPA requires that an EIS may be prepared for new regional wastewater treatment or water supply systems for a community with a population greater than 100,000, (40 C.F.R. § 6.207(a)(1). Other conditions triggering an EIS (40 C.F.R. § 6.207(a)(3) include:

- Issuance of new source federal NPDES permit for a new major industrial discharge. Preliminary discussions with USEPA Region 4, Water Division, indicated that an NPDES trigger is probable, although no effluent guidelines currently exist for concentrated seawater discharge.
- Discharge of treated effluent from a proposed project into a body of water that is likely to have a significant effect on the quality of the receiving waters.
- Significant affect to environmentally important natural resources such as wetlands, significant agricultural lands, aquifer recharge zones, coastal zones, barrier islands, wild and scenic rivers, and significant fish or wildlife habitat.

The grant applicant's role in this process typically involves providing USEPA clarification of baseline information, assisting USEPA with public meetings or hearings during the EIS process, and/or assisting USEPA if the project changes or if mitigation is recommended during the review process. As an alternative pursuant to 40 CFR § 6.303 and as discussed under the EA, USEPA may enter into third-party agreement with the grant applicant to hire a contractor to prepare the EIS. USEPA cautions that grant funds may not be used to prepare a federal agency document, such as an EIS. Thus, the applicant would pay for the third-party consultant with USEPA providing technical direction on the preparation of the EIS. In this circumstance, USEPA retains ultimate responsibility for finalizing and issuing the EIS, and preparing the Record of Decision using the EIS inputs from the third-party consultant. Note that there are strict rules for qualifying as a "third-party" EIS contractor one of which no financial interest in the outcome of USEPA's decision-making. A "typical" EIS outline is as follows:

- Purpose & Need for the Proposed Action
- Description of the Proposed Action
- Alternatives Considered (including the no-action alternative)
- Affected Environment (including baseline conditions)
- Environmental Consequences of the proposed action and alternatives
- Mitigation Measures (including mechanisms such as special grant conditions needed to ensure that mitigation is carried out)
- Coordination & Consultations (agencies, persons)
- List of Preparers
- Index of Terms
- Appendices

There are several key procedural differences between an EA and an EIS. One is the level of public involvement in the process and the second is the need for a Record of Decision.

Public participation in the EIS process begins when USEPA publishes a notice of intent to prepare an EIS in the U.S. Federal Register. Following issuance of the notice of intent, the public has the opportunity to provide input on the scope of the EIS. This includes participating in scoping meetings. The purpose of scoping meetings is to explain the project to the public. More importantly, it's to receive input from the public, involved agencies, and cooperating agencies (those with legal party status in the process) on the alternatives and issues to be discussed in the document. Both the Draft EIS and Final EIS are distributed to the public and other interested parties for review. A notice of availability (NOA) is published in the Federal Register by USEPA announcing the release of the Draft EIS for a 45-day review period with any associated public hearing. A NOA is also published in the Federal Register by USEPA for the release of the Final EIS for a 30-day review period (also known as a waiting period). A NOA may be published announcing the release of the Record of Decision.

Finally, a NEPA EIS, unlike an EA, requires the lead federal agency to prepare a Record of Decision. A Record of Decision is required under 40 C.F.R. § 1505.2 and is intended to summarize the project, issues, and required mitigation measures. More fundamentally, the Record of Decision establishes the basis for USEPA's decision-making….to undertake a given alternative in fulfillment of the project's expressed purpose and need. The alternative can be the applicant's proposed action, an environmentally preferred alternative or some other alternative developed throughout the EIS process. Once the Record of Decision is concluded, the applicant (grantee) may proceed with the selected action.

4. Environmental Resource Permit

4.1. Introduction

Florida's Environmental Resource Permit (ERP) permit requirements are designed to ensure no adverse impacts to the land or aquatic environment during and after construction of a facility. The ERP requirements, as summarized in Florida Administrative Code Chapter 62-330, ensure compliance with various acts, including but not limited to the Clean Water Act and Endangered Species Act. The ERP application will need to include evidence of compliance with Florida Administrative Code (FAC) Rules administered by FDEP, as lead agency, together with requirements of Department of Army permits, and other stakeholder agencies acting in consulting or commenting roles.

4.2. Application Process

The application documentation will be a single comprehensive package submitted concurrently to FDEP and USACE, and reviewed by various consulting/commenting agencies before a permit is granted. The application will address prevention of adverse effects to fish and wildlife as well as protection of water resources, such as rivers, wetlands and sovereign submerged lands. Crossings below sovereign submerged lands s may require a lease agreement, which will require involvement of numerous review agencies. A water quality and data collection plan for review by FDEP should be submitted ahead of the ERP application to reduce delays from formal requests for additional information.

Department of Army permits are administered by the US Army Corps of Engineers (USACE), and include requirements related to dredge and fill operations under the Clean Water Act (Section 404), and River and Harbors Act (Section 10). The ERP process will need to include evidence of compliance with these acts, for protection of navigable waters, recreation areas and marine resources.

Permitting aspects related to structures above the ocean floor, which could impact navigation, are of concern to the US Coast Guard (USCG). USCG will act as consulting agency to USACE for navigation issues relating to permits for intake and discharge structures.

The pipeline corridor, both on-shore and off-shore, will be reviewed by the National Marine Fisheries Service (NMFS) - a department within the National Oceanic and Atmospheric Administration (NOAA), and US Fish and Wildlife Service, acting for USACE. NMFS will be called upon to comment on aspects along the pipeline corridor relating to marine habitat, particularly hard-bottom ocean floor, for potential impacts to ocean and inland water quality, turtle habitat and wetlands.

A coastal construction control line is established at a defined distance back from the mean high water line, generally 50-feet. A separate coastal construction control line permit will be required in the unlikely event that excavations or other disturbances are required for beach crossings or areas within the coastal construction control line.

Discussions with FDEP indicate a minimum 2 year period will be required from application before ERP approval is given. A period of approximately 12 months will be required to gather data and survey information and complete the application before submittal.

Processing fees will be based on the total project footprint, including buried and submerged pipelines. On the basis that construction in or under wetlands or surface waters (ocean) will exceed 50 acres, total ERP permit fees are not expected to exceed $20,000.

4.3. Offshore Facilities

4.3.1. Description of Overall Facility

The purpose of the offshore facilities is potentially two-fold. First, in the event beach wells are not able to provide sufficient capacity, an off-shore intake will be necessary. Second, there will be a need to discharge concentrated seawater left over from the desalination process to a suitable location in the ocean. An approximate range of flow rates and sizes for both the intake and concentrate discharge conduits is shown in Table 4.1. The values presented are preliminary, and will be further defined in Phase 2B of the project.

Table 4.1 Preliminary Conduit Flow Rates and Sizes

Conduit	Plant (MGD)	Conduit (MGD)	Dia (ins)
Intake Pipe/ Tunnel	50	120	84
	25	60	60
Discharge Pipe/ Tunnel	50	70	66
	25	35	48
Combined Intake /Discharge Tunnel	50	190	108
	25	95	78

The combined tunnel option will have to be studied in further detail in the next phase of the project, but consists of running the intake and discharge facilities through a common tunnel, before diverging them to obtain the required separation at the points of intake and discharge. The intake and discharge functions could be separated within the single tunnel in a number of potential ways, such as a central wall, or separate pipes within the tunnel. If viable, it most likely will represent the most economical option, although it is recognized that there are significant construction and operational issues with this arrangement that would need to be evaluated in detail.
The final offshore facilities are likely to include the following elements:

Tunnel – Provided that the treatment plant site is located sufficiently close to the ocean, it is currently envisioned that a tunnel (or tunnels) will run from the treatment plant to a suitable point in the ocean where it can transition to a near surface, buried pipeline. The tunnel will pass under the Intracoastal Waterway and the beach area, and thus significantly reduce permanent impacts to these areas typically associated with open cut construction.

Transition Structure – The transition structure will provide transition from the tunnel to the near surface pipeline.

Near Surface Pipeline – This pipeline will extend from the transition structure to the Intake/Discharge structures

Intake/Discharge Structures – These structures will be located at a suitable location in the ocean to allow adequate depth for intake and discharge with due regard to water quality, physical effects to the ocean environment, and local marine ecology (i.e., local marine species, seagrass beds, corals, etc.).

Criteria for depth of transition structure – Depth of the structure is a key issue to be established during the permitting process. It will help determine the length and cost of the tunnel and may depend on shipping/navigation channel requirements, tidal variations and

wave heights, suitability of sea bed and geotechnical conditions, etc. The ERP permit conditions won't preclude a required depth based on the proposed design.

4.3.2. Description of Key Elements

Tunnel – The tunnel would start on the mainland, presumably at the treatment plant site, if economics and environmental considerations support this option. Approximately 2 to 3 acres would be required for the tunnel contractor during construction. This would include a shaft, crane, temporary areas for pre-cast concrete segments and muck from the tunnel.

The tunnel must be placed at depth below the ocean bottom to provide cover over the tunnel. This cover and depth depends on the geologic conditions and the diameter of the tunnel. However, for planning purposes, the depth of tunnel could be on the order of 50 feet, or more below the existing ocean bottom. As discussed, the tunnel will be driven to the Transition Structure. At that point, the tunnel boring machine will be disassembled and removed. After completion of tunneling, work may be required within the tunnel to potentially place pipelines.

Transition Structure – The transition structure will allow the pipelines to extend from the tunnel depth to the near surface depth. This will require a shaft from the sea floor down to the tunnel depth. The pipes would be placed inside the shaft and brought to the near surface. The shaft can then be grouted or backfilled. The depth or diameter of the shaft has not been determined. However, for planning purposes a diameter of approximately 20 feet and a depth of 30 feet could be considered.

At the completion of the work, there will be no subsurface structure. However, during the construction and completion of the shaft, a major work platform may be required. The platform could be in place for an extended period of time. As with the size, this time period has not been determined. However, for planning a period of about six months or more should be considered. Placement of the platform, although a temporary structure, may require its own permits and consultation approvals from the involved federal agencies (i.e., USACE, Navy and Coast Guard).

Near Surface Pipeline – As a measure that reduces vulnerability and possible permitting issues we would propose a near surface pipeline versus a pipeline on the sea bed. Such conduit will extend from the Transition Structure to the Intake/Discharge structures. The placing of the pipeline will require a barge potentially utilizing a dredge.

4.3.3. Key Permitting Issues

Tunnel Construction Permitting – The tunneling construction will produce excess construction water and rock/soil excavated from within the tunnel. Both of these are standard issues with tunneling contracts. Other operations associated with tunneling often include trucking, electrical supply, siting of construction trailers, and coordination with other utilities. The contractual documents often make the contractor responsible for this work and for compliance with all applicable regulations. It is possible that these permits could be combined with other construction permits at the treatment plant. A Dredge and Material Management Area permit, should not be required. Excavated tunnel material (tunnel muck) will disposed off site in a permitted location. Dredging associated with the near surface pipeline will be covered under the ERP. Tunnel Subsurface Permitting – The tunnel will pass under, at a minimum, the following surface features. It is anticipated that the following permits will be required:

- Private Property (Mainland and Island) – Passage under private property typically requires an easement, not a permit. Thus, while not strictly a permitting issue, the need for these potential easements should be considered early in the scheduling process.
- Coastal Zone Management Area – FDEP and the USACE will provide a coordinated permit review through an ERP. The requirements of the ERP will include the requirements for passing under the coastal area. Since the tunnel will pass under this area, this permit will be required. However, since the tunneling operation should have little impact on the coastal area, the requirements of this permit should be minimal. As with any permitting agency, we should review our work with them so that they can make the determination.
- Seafloor Disturbance –FDEP and the USACE will provide a coordinated permit review. This coordinated permit will cover the tunnel, transitions structure, and the near surface pipeline. It is likely that the permitting agencies for the transition structure will be the same as the tunnel. And since the transition structure will have the potential for the most significant impacts, the permitting issues are discussed within that section.

Transition Structure – Care will be taken to select a location for the transition structure that minimizes temporary impacts to the seafloor. We understand that the ERP will be coordinated by USACE if it is more than three miles off shore, and by FDEP if less than three miles Based on this, a series of reviews and/or co-reviews may be required:

- US Coast Guard – for coordination of navigation in the area of the barge. Requirements will include hazard lighting on all floating equipment and temporary structures, and a Notice to All Mariners released by the USCG with

coordinates and locations, and types of floating equipment and temporary structures. This is usually submitted to the USCG prior to mobilization of contractor's equipment.

- US Navy – Coordination with planned submarine operation in this area. The USACE will notify the US Navy of planned structures as they will be within navigable federal waters. The USACE coordinates with other affected federal agencies should their participation in permit reviews become necessary.
- US Army Corps of Engineers – Section 10/ 404 permit for dredge and fill operations
- NOAA – NMFS – Protection of fishing resources in the area
- U.S. Fish and Wildlife Service - endangered species consultation
- State Historic Preservation Office – coordination with state SHPO for potential Section 106 structures/sites both on land and in the water.

The ERP conditions will govern the marine construction portions. Pre-permit requirements may include the following:

- Existing condition bathymetric survey
- Topographic survey at the tunnel head or starting point and surrounding area
- Benthic resource survey to determine types and numbers of marine organisms
- Fisheries survey
- Critical/Sensitive Habitats survey - Seagrass areas, coral reefs, marine sanctuaries, threatened and endangered species habitat
- Coastal wetlands such as mangroves

Public domain information, data sets, and surveys conducted by research organizations, universities, or governmental entities may be utilized with the approval of the permitting agency. Some substantial effort is usually required to locate these public domain data sets.

Care will be taken to avoid or minimize impacts to sea-grass beds and benthic populations as a result of construction activities. Natural resource surveys will be performed to determine the level of impact avoidance or mitigation required due to any unavoidable disturbances to these ecosystems. The construction means and methods must also be considered for seafloor disturbances such as temporary coffer-cells, spuds on barges, anchor blocks, etc. These mitigation costs can be substantial, and are performed at the direction of the permitting agency.

Prior marine construction experience has indicated that, generally, a 30 % design shown in plan and elevation, complete with Section/Township/Range, land use, elevations and horizontal controls, on 8 ½"x11" permit sheets is required for submission. Individual permitting officers may have some latitude as to the level of detail shown, however, previous experience has shown that an approximate 30% design effort is required for permit drawings with regards to marine structures. Surveys and plans may also be required to reflect the location of floating equipment and temporary structures. Staged construction techniques for this type of work may also need to be incorporated or shown in the permit drawing sets.

Near Surface Pipeline – The installation of the near surface pipeline will be similar to the transition structure. It will require a temporary barge and potentially a dredge or other equipment. Thus, the same permit requirements are required as for the transition structure. Additional considerations and permitting conditions could result if the pipeline is partially exposed near the sea bottom.

Terminal Structures - Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable waters of the United States. The ERP application will be reviewed by USACE to verify compliance with this regulation.

US Coast Guard is responsible for coordination of navigation in the areas of the proposed terminal structures. Initial discussions with a representative of the Waterways Management Division indicated that no significant constraints are likely be imposed to a structure located in 30-feet more water depth below Mean Lower Low Water. The structure, which could exceed 10' above ocean floor, will require lighted and signaled buoy markers if shallower than 50-feet below Mean Lower Low Water. A Notice to All Mariners will be required to be released by the USCG with coordinates and locations of floating equipment and structures.

Several attempts were made to contact an appropriate representative in the US Navy, SE Port Operations Division. The Director of Port Operations, who is responsible for naval operations in the area, did not offer any information regarding naval operations or constraints to development of the intake and discharge structures.

The location of the structure would be of concern to NOAA/NMFS. Initial discussions with a representative of NMFS indicated that hard bottom areas should be avoided for terminal structure locations. These areas are important for habitat and perhaps shrimp trawling operation.

In recent projects in the U.S., the regulatory requirements associated with marine life impingement and entrainment of intakes designs has taken center stage with regard to intake permitting issues. Discussions with FDEP confirmed that the intake structure will need to confirm compliance with requirements of Section 316(b) of the Clean Water Act regarding impingement/entrainment management, before issuance of an ERP. Compliance under 316(b) typically means implementing best available technologies that will reduce, especially entrainment, impacts to less than significant levels.

4.3.4. Constraints to Construction

The entire tunnel, transition structure, and near surface pipeline will be a major operation with many inter-related permit requirements. However, permit compliance is common with these projects. Undoubtedly, the greatest constraint to construction will be with the transition and terminal structures. The constraints will include: protection of environmental resources; coordination with navigation issues; and protection from storm events. Other constraints will be identified as the project progresses. The pipeline routing and construction will be reviewed within the ERP permitting process by several agencies. In particular, routing will need to be selected to avoid hard bottom habitats, wherever possible. Construction activities, should they occur in the habitat, will be scheduled around calving season using methods of construction that do not impact the whale habitat

4.3.5. Marine Environment

The ERP includes considerations to ensure that the marine intake and discharge do not result in significant changes in the marine environment related to these activities. A water quality and data collection plan will be submitted to FDEP for review prior to finalization of the ERP. In conversation with FDEP ERP permitting personnel, the ERP was noted to be primarily concerned with water quality conditions being maintained and meeting State water quality standards, as this would be indicative of maintenance of appropriate conditions for existing ecosystem components.

Specific components of the marine environment to be considered include water quality and seafloor and benthic habitat. Seafloor habitat may consist of submerged aquatic vegetation and/or hard bottom areas. Since ERPs will be required for both the pilot plant and the treatment plant, monitoring plans will be developed for each of these permit applications. The monitoring plans for the discharge locations are likely to be the same as those developed for the NPDES permitting effort for both the pilot and treatment plants.

Monitoring programs will be designed for water quality, submerged aquatic vegetation, bottom type, and benthos, dependent upon the final selected locations for the intakes and

discharges of both the pilot and final facilities, and upon the expected areas of influence as based upon best available information. Water quality monitoring at the discharges will be for a subset of constituents as defined by state water quality standards for Class 3 Marine waters, as listed in FAC 62-302.530, Criteria for Surface Water Quality Classifications. Table 1 provides the criteria for Class 3 Marine (Class III-M) waters as listed in FAC 62-302.530. Only those constituents which have Class III-M criteria are listed. The final suite of constituents for which monitoring will be performed, both before and during facility operation, at both intake and discharge sites, will be determined in consultation with FDEP. One constituent for which no single criterion value is provided in this table is the Thermal Criteria, which references Section 62-302.520 F.A.C. Temperature will be monitored in the discharges, and compared to allowable temperature excursions as provided for in this section of the Florida Administrative Code.

Monitoring in support of the permitting effort should begin as soon as reasonable, so that data can be obtained from as long a pre-operational period as possible, with monitoring required for at least a year for the ERP, according to information provided in the February 2011 permitting meeting with FDEP. This will allow establishment of baseline conditions, including quantification of natural variability in water quality and important biological populations and habitats (benthos, submerged aquatic vegetation).

The finalized discharge monitoring plans will be applicable to discharges both within the state waters 3-mile limit, and outside this limit. Outside the 3-mile limit is federal jurisdiction, and ocean discharge into this jurisdiction is addressed under the Clean Water Act, 40 CFR Part 125 Subpart M – Ocean Discharge Criteria. Subpart M states that "Discharges in compliance with … State water quality standards shall be presumed not to cause unreasonable degradation of the marine environment, for any specific pollutants or conditions specified in the … standard." Therefore, monitoring to ensure attainment of state standards will likewise serve to meet the requirements of the federal criteria of ocean discharge.

4.4. Onshore Facilities

The onshore portion of the ERP process will be required for the construction of the land-based desalination plant, distribution system and onshore portion of the intake and concentrate pipeline. Storm water retention and treatment for the plant site will also be part of the ERP onshore considerations. Similar to the offshore permitting requirements, onshore construction will have to consider and mitigate impacts to wetlands as well as other environmental and cultural resources.

4.4.1. Beach Wells

Construction of beach wells will be approved through the consumptive use permitting process. Construction of the discharge piping will be included in the ERP process and permitting issues for conduits will include impacts to wetlands, fish and wildlife in addition to impacts from selected construction method (dredge and fill methods, etc.).

4.4.2. Intra-coastal Crossing

Construction and permitting of crossings of the intra-coastal waterways will fall under the jurisdiction of the USACE, but some areas are considered Sovereign Submerged Lands. USACE will require that construction for intake and discharge conduits avoids existing marine protection areas including coastal wetlands. Some existing easements (FPL and FDOT) may be available for use, but construction should avoid existing bridge pilings. Permitting issues for intra-coastal crossings will include impacts to wetlands, fish and wildlife in addition to impacts from selected construction method (e.g., dredge and fill, etc.).

4.4.3. Treatment Plant

Construction of the treatment plant components will create impervious surfaces that alter the existing onsite stormwater runoff characteristics. In addition it may include impacts to wetland. A description of the proposed impacts to wetland, wildlife, and existing stormwater runoff will be required in addition to the proposed mitigation strategy for those impacts. Pre and post development drainage calculations will be required.

5. Public Water System Construction Permit

5.1. Introduction

To ensure protection of public health, safety, and welfare, any construction, modification, or operation of a public drinking water supply, and the construction of potable water system components is governed by FDEP and chapter 62-555 Florida Administrative Code (F.A.C.). The proposed construction will require the submittal of a permit application (Form 62-555.900(1)) to FDEP entitled "Application for a Specific Permit to Construct PWS Components".

The application process is limited to the part of the project that includes the components from the proposed intake to the remaining land-based portions of the project that include the land-based desalination plant and the finished water distribution system. Should beach wells be selected for intake, the application would include project components starting at the discharge of the wells. The description and design documents pertaining to the required offshore facilities will be provided with the submittal of the application package in order to provide a comprehensive view of the project, but do not fall under the jurisdiction of this permit.

5.2. Application Process

The application to Construct Public Water System Components and the required application fee will be submitted to the FDEP accompanied by the Preliminary Design Report, pilot study and the 60 percent complete contract documents.

The exact application process has not been determined, but submittal of the application has two options:

- Submitting an application for the land-based desalination plant and the distribution system together. This will require one $12,500 permit application fee according to Chapter 62-4.050(n), F.A.C. for a Category II treatment plant, greater than 5 MGD, as defined in Rule 62-699.310, F.A.C.
- Submitting an application for the land-based desalination plant and the distribution system separately. The application fee for the plant will be $12,500 and the application fee for the distribution system will be $900 per reviewing agency (discussed below).

The location of the land-based plant has not been determined, but will lie within the jurisdiction of the FDEP Northeast District. The distribution system is divided between the FDEP Northeast and Central Districts. The review of the application can have three possible options.

- Review of all application documents by the FDEP Northeast District (plant and distribution system).
- Review of the application documents by the FDEP Northeast District (plant and part of the distribution system) and the Central District (part of the distribution system).
- Review of the application documents by the FDEP Northeast District (plant and part of the distribution system), the Central District (part of the distribution system) and several local public health departments that have been authorized as agent for FDEP (part of the distribution system).

Preliminary conversations with FDEP identified a preference to submit one application for the entire system.

5.3. Onshore Facilities

Prior to commencement of construction activities, the submittal of a construction permit application to the FDEP using Form 62-555.900(1), Application for a Specific Permit to Construct PWS Components, is required. A separate application or notice is required for each non-contiguous project; non-contiguous projects are projects that are neither interconnected nor located nearby one another.

The application submittal must be accompanied by one copy of either, a preliminary design report, or drawings, specifications, and design data as described below. Additional information may be required by the FDEP to clarify any construction permit application or notice; to clarify any preliminary design report or drawings, specifications, and design data; or to demonstrate that new or altered public water system components will comply with requirements of Chapter 62-555, F.A.C. and provide drinking water meeting all applicable standards in Chapter 62-550, F.A.C.

Preliminary Design Reports must be prepared under the responsible charge of one or more Florida-licensed professional engineers and must include information outlined in Rule 62-555.520, Subsection (4).

Drawings, specifications, and design data, which must be prepared under the responsible charge of one or more Florida-licensed professional engineers, need to be sufficiently complete and detailed to allow the FDEP to determine whether the design of a project provides assurance of compliance with Chapter 62-550, F.A.C. and Chapter 62-555 F.A.C.

6. National Pollution Discharge Elimination System

6.1. Introduction

An NPDES permit is required under Section 402 of the Clean Water Act for all discharges that can potentially cause pollution of waters of the United States. Section 401 of the Act requires that discharges are certified to have no adverse water quality impacts. FDEP will process NPDES applications for discharges within 3 miles of the coastline, whereas discharges beyond 3 miles will fall under USEPA.

6.2. Application Process

Scopes of study to establish baseline marine biology conditions and to determine mixing zones should be submitted to FDEP for review ahead of field studies to reduce later delays from formal requests for additional information in the ERP process. Hydrodynamic studies will be required over a minimum period of 15 months to establish conditions for mixing zones and toxicity determinations over a full season, before the ERP application is submitted. Chapter 62-4, F.A.C covers requirements for mixing zones.

The USFWS and NMFS, a department of NOAA, will act as consulting agencies to FDEP for marine protection considerations.

A minimum period of two years is anticipated by FDEP for the ERP approval process following receipt of the application. NPDES permits are generally issued for a period of five years before renewal is required. Concentrate discharge is considered an industrial waste by FDEP, which implies a fee of approximately $15,000 for the Coquina Coast Project.

6.3. Hydrodynamic Modeling

A hydrodynamic study of the proposed site for the desalination plant is needed to identify suitable locations for plant intake and discharge so as to minimize impact on surrounding water and ecological species. This requires a comprehensive study on the hydrodynamic conditions (including currents, salinity, temperature, waves, stratification, and flushing characteristics) to be expected in the coastal waters near the proposed desalination plant. Specifically, the study plan will include:

1. Hydrodynamic data collection and analysis -

   Collect and analyze field data (current, salinity, temperature, wave, wind, water level, suspended sediment concentration, turbidity, and bottom sediment type and composition, etc.) for 18 months at between two and five sites in coastal waters adjacent to the proposed plant site, to cover a wide range of meteorological and hydrodynamic conditions (including extreme events such as N'easters and storms, seasonal and diurnal variability, tidal influence, high waves, stratification) in the study area.

2. Hydrodynamic model simulation –

   Simulate observed data over 12-18 months to verify the hydrodynamic model, so that the model can be used to predict future hydrodynamic conditions.

3. Dilution/Mixing study –

   Consider a number of concentrate discharge options and use a nearfield hydrodynamic model coupled to the large scale hydrodynamic model, to quantify the dilution/mixing zone of concentrated seawater to ensure that NPDES standard is met.

4. Sediment study –

   Using the sediment data in water and sediment column, and numerical modeling, determine if significant scouring and high turbidity condition may occur at the study site. Scouring will affect navigation in the area and high turbidity may adversely impact biological species.

The study is expected to take 24 months to complete, and findings will be summarized in a report.

6.4. Marine Biology

The NPDES permit includes considerations to ensure that the marine discharge from any activities do not result in significant changes in the marine environment related to these activities. A water quality and data collection plan will be submitted to FDEP for review prior to finalization of the NPDES permit. NPDES requirements are that state water quality standards be met.

Specific components of the marine environment to be considered include water quality and seafloor and benthic habitat. Seafloor habitat may consist of submerged aquatic

vegetation and/or hard bottom areas. Since NPDES permits will be required for the test wells and radial collector wells (see Section 6.2.2), the pilot plant, and the final plant, monitoring plans will be developed for each of these efforts. The monitoring plans for the pilot and final plant discharges are likely to be exactly the same as those developed for the ERP permitting effort.

Monitoring programs will be designed for water quality, submerged aquatic vegetation, bottom type, and benthos, dependent upon the final selected locations for the discharges of test wells and radial collector wells, and the pilot and final plants, and upon the expected areas of influence as based upon best available information. Water quality monitoring at the discharges will be for a subset of constituents as defined by state water quality standards for Class 3 Marine waters, as listed in 62-302.530, F.A.C., Criteria for Surface Water Quality Classifications. Table 1 provides the criteria for Class 3 Marine (Class III-M) waters as listed in F.A.C. 62-302.530. Only those constituents which have Class III-M criteria are listed. The minimum list of specific constituents for which monitoring is required for demineralization concentrate effluent, as provided in 62-620.625 (6)(a) and (6)(c), F.A.C. follows:

- flow
- dissolved oxygen
- pH
- hydrogen sulfide
- specific conductance
- total dissolved solids
- color
- aluminum
- bromide
- calcium
- chloride
- copper
- fluoride
- iron
- magnesium
- nitrate as nitrogen
- nitrite as nitrogen
- unionized ammonia as nitrogen
- ammonia-ammonium as nitrogen
- total nitrogen
- total organic nitrogen
- total phosphorus
- ortho-phosphate
- potassium
- sodium
- combined radium 226 and 228
- gross alpha particle activity (including radium 226, but excluding radon and uranium)

Requirements for toxicity monitoring are provided in 62-620.625 (6)(c), F.A.C., for demineralization concentrate discharge, with the provisions of 62-4.244 (3)(d), F.A.C., applicable to surface water discharge of demineralization concentrate for which ionic imbalance is demonstrated. Ionic imbalance is defined as "…the failure of whole effluent toxicity tests caused predominantly by the presence of major ionic constituents naturally

occurring in the source water…" (62-4.244 (3)(d) F.A.C.). Mixing zones are allowed for toxicity caused by ionic imbalance under specific conditions provided in 62-4.244 (3)(d).

The final suite of constituents for which monitoring will be performed, both before and during facility operation, will be determined in consultation with FDEP. One constituent for which no single criterion value is provided in Table 1 is the Thermal Criteria, which references Section 62-302.520, F.A.C. Temperature will be monitored in the discharges, and compared to allowable temperature excursions as provided for in this section of the F.A.C.

Monitoring in support of the permitting effort should begin as soon as reasonable, so that data can be obtained from as long a pre-operational period as possible, with monitoring for at least a multi-year period for the final plant. This will allow establishment of appropriate baseline conditions, including quantification of natural variability in water quality and important biological populations and habitats (benthos, submerged aquatic vegetation). Pre-operational monitoring at a shorter duration is likely needed prior to test well, radial collector well, as well as pilot plant testing. The exact period of data collection will be determined in consultation with FDEP as the project schedule becomes more fixed.

The finalized discharge monitoring plans will be applicable to discharges both within the state waters 3-mile limit, and outside this limit. Outside the 3-mile limit is federal jurisdiction, and ocean discharge into this jurisdiction is addressed under the Clean Water Act, 40 CFR Part 125 Subpart M – Ocean Discharge Criteria. Subpart M states that "Discharges in compliance with … State water quality standards shall be presumed not to cause unreasonable degradation of the marine environment, for any specific pollutants or conditions specified in the … standard." Therefore, monitoring to ensure attainment of state standards will likewise serve to meet the requirements of the federal criteria of ocean discharge.

6.5. Intake and Discharge Design

Discharge structure and diffusers will need to be designed to conform to hydrodynamic requirements, to ensure adequate dilution of concentrate, as determined during thermal, current and toxicity testing outlined in Sections 6.3 and 6.4.

Intake structures are covered under NPDES permitting by Section 316(b) of the Clean Water Act, which requires assurance that the location, design, construction and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impacts to fish and various plankton life stages. This portion of

the Clean Water Act is designed to minimize impingement and entrainment of fish and shellfish life stages at cooling water intakes. The Act was specifically promulgated for cooling water intakes, but the FDEP and SJRWMD have indicated that it will apply to seawater intakes to minimize impingement and entrainment impacts to marine life.

6.6. Pilot Testing Requirements

The pilot testing facility will include a sea water intake and discharge. The specific intake and discharge methods have not been determined. NPDES permitting will be required for the discharge of the pilot testing water. For the pilot testing process, permeate from the reverse osmosis process will be combined with the concentrate to return the water back to original water quality conditions. According to conversations with FDEP, the specific requirements for the pilot testing permitting process for this project have not been clearly outlined, but are anticipated to follow a similar process as outlined in the above sections.

7. Consumptive Use Permit

7.1. Introduction

The findings of Phase 1 of the Coquina Coast Project included a recommendation that beach wells and screened intakes be further evaluated during Phase 2. Beach wells, or radial collector wells, consist of a vertical caisson and multiple horizontal laterals projecting outward into the surficial aquifer located on land close to the coastline. Screened intakes consist of heads, risers, screens, and a pipeline and are located on the sea floor some distance offshore in water at least 30 feet deep. The type of intake ultimately selected for the project will in part dictate any CUP requirements associated with the Project.

Based on initial discussions, the SJRWMD has indicated its intent to require this project to obtain a CUP; a permit which authorizes the withdrawal of water from a surface water or groundwater source for reasonable and beneficial uses such as public supply, agriculture, and commercial and industrial uses.

The jurisdiction of the state extends 3 miles from the coastline into the Atlantic Ocean. Beach wells will occur on land near the coast and are subject to State regulations. A screened intake located in the Atlantic Ocean within 3 miles of the Florida coastline would also be subject to state regulations.

The SJRWMD's specific regulations relating to consumptive uses are within Chapter 40C-2, Florida Administrative Code (F.A.C.) and the SJRWMD's Applicants Handbook. The SJWRMD requires a water user to obtain a CUP under the following primary conditions:

1. The proposed use exceeds 100,000 gallons per day on an annual average basis;
2. The facilities (well pumps etc.) used to withdraw the water will have a total capacity greater than or equal to 1 million gallons per day (MGD); or
3. When wells 6-inches or greater in outside diameter (measured at ground surface) are utilized to withdraw water from a supply source (unless the well owner or well contractor can demonstrate that the well has a smaller diameter below ground surface).

Should the project ultimately require a CUP through the SJRWMD, it will likely be based on the above regulations, if the project intake involves either beach wells or a screened intake within 3 miles of the coastline. If the final project configuration includes a screened intake located greater than 3 miles from the Florida coastline, the project is not

required to obtain a CUP. This was confirmed with the United States Environmental Protection Agency (USEPA) and the US Army Corps of Engineers (USACE) which indicated that there are no Federal regulations regarding the consumptive use of federal marine waters (Buff, 2011)).

7.2. Application Process

7.2.1. Conditions for Issuance

To obtain a CUP from the SJRWMD, an applicant must establish that the proposed use of water:

1. Is a reasonable-beneficial use;
2. Will not interfere with any presently existing legal use of water; and
3. Is consistent with the public interest.

The following criteria must be met in order to be considered reasonable-beneficial:

1. The use must be the quantity necessary for economic and efficient utilization;
2. The use must be for a purpose that is reasonable and consistent with the public interest;
3. The source of the water must be capable of producing the requested quantity of water;
4. The environmental or economic harm caused by the consumptive use must be reduced to an acceptable amount;
5. All available economically, environmentally, or technologically feasible water conservation measures must be implemented;
6. Reclaimed water must be used in place of higher quality water sources where economically, environmentally, or technologically feasible;
7. The lowest acceptable quality water source must be utilized;
8. The use shall not cause significant saline water intrusion or further aggravate currently existing saline water intrusion problems;
9. The use shall not cause or contribute to flood damage;
10. The water quality of the source of the water shall not be seriously harmed by the consumptive use;
11. The use shall not cause or contribute to a violation of state water quality standards in the receiving waters; and

12. The use must not cause water levels or flows to fall below adopted minimum flows and levels (Chapter 40C-8 F.A.C.).

The first criterion above that must be met in order to assure a use is reasonable-beneficial is that the use must be the quantity necessary for economic and efficient utilization. This encompasses many aspects of the SJRWMD's CUP requirements including demonstration of need, implementation of water conservation, and the use of lower quality sources including but not limited to reclaimed water and stormwater. As part of the CUP application, the applicant will have to provide a demonstration that the proposed use is necessary to meet projected water supply needs. This involves the following:

1. Determine the preferred permit duration to request. The SJRWMD typically issues CUPs with a duration of 20 years or less. However, a duration up to a maximum of 50 years can be requested if the applicant is a municipality, other governmental body, or a public service corporation; the applicant demonstrates that the requested duration is required to provide for the retirement of bonds for construction; and the applicant provides reasonable assurances that the proposed use meets the conditions for issuance.
2. Develop water demand projections through the requested duration of the permit.
3. Submit a water conservation plan that demonstrates that all available economically, environmentally, or technologically feasible water conservation measures will be implemented throughout the requested duration of the permit and how this conservation potentially reduces the projected water demands.
4. Demonstrate that reclaimed water is being utilized to meet demands where economically, environmentally, or technologically feasible for the requested duration of the permit and how reclaimed water use reduces the projected water demands.
5. Demonstrate how other lower quality water sources such as stormwater or surface water are proposed to be utilized throughout the requested duration of the permit and how that use will reduce the projected water demands.
6. Determine the Supplier's water supply deficit as the total water demand less the portion of that demand that will be met with conservation, reclaimed water use, and the use of other lower quality sources.
7. Determine what portion of the Supplier's projected water supply deficit will be met with water from the Project and what portion will be met through other potential sources.

The above process determines the allocation request for the project and provides reasonable assurance for the reasonable-beneficial use conditions 1, 2, 5, 6, and 7 above. An applicant's projected demands, including proposed conservation, reclaimed water use, and other lower quality water use are vetted with the SJRWMD during the permitting process. As such, the required capacity of the final Project may vary from that currently planned based on the projections developed as part of this Project.

Reasonable-beneficial use criteria 3, 4, and 8 through 12 require the submittal of an impact assessment. The impact assessment will vary depending on the type of intake (beach wells or screened intake) selected for the final project configuration. The impact assessment for each intake type is discussed briefly below.

7.2.2. Beach Wells

If an impact assessment beyond hydrogeologic analyses conducted in support of the test well program is required, the impact assessment may require the development and submission of a groundwater flow model or other suitable groundwater analysis and an associated environmental impact assessment of the results. If required, the groundwater flow model or analysis would be used to provide reasonable assurance that the groundwater source is capable of producing the requested quantity of water, that potential environmental and economic harm are minimized, and that no adopted minimum flows and levels (MFLs) will be violated. While no impacts to the saline water in the surficial sediments are anticipated, any such analysis would also need to demonstrate that any existing fresh water aquifer in the vicinity of the withdrawal would not be harmed.

The proposed beach wells will be located near the coastline and completed in the surficial aquifer. In general, there are not adopted MFLs located along the coastline of the SJRWMD in the areas being evaluated as part of the Project. As such, it is not anticipated that there will be issues related to MFLs. However, the groundwater flow modeling may be needed to demonstrate that no impacts to local environmental constraints will occur as a result of the proposed beach wells.

The groundwater evaluation will also serve to demonstrate that the proposed use will not interfere with any existing legal uses (Condition of Issuance 2 above). Because the beach wells will be located in the surficial aquifer where the groundwater is saline, it is not anticipated that there will be a significant number of existing legal users to consider.

7.2.3. Submerged Screened Intake

For a submerged screened intake located in the open ocean, it is not anticipated that any significant numerical or analytical modeling will be required. There are not currently any MFLs adopted near that coast of the potential intake locations that would be of concern.

In addition, the proposed withdrawal will not result in a decrease in the elevation of the ocean surface; therefore, no MFLs or existing legal users will be affected. From a hydrologic standpoint, the extraction of water from the ocean will not cause environmental harm.

7.2.4. Common to Both Intake Types

Reasonable-beneficial use criteria 8, 9 and 10 are not anticipated to be significant issues due to the nature of the water source and water use.

Reasonable-beneficial use criterion 11 requires that the proposed use not violate state water quality standards for the receiving waters. The withdrawal of saline groundwater from the surficial aquifer or seawater from the ocean will not result in a violation of state water quality standards; however, a demonstration that discharge of the concentrate does not violate water quality standards will need to be provided. Concentrate management is regulated by the FDEP and has a separate permitting process under the NPDES program. SJRWMD's regulations indicate that obtaining a concentrate management permit provides reasonable assurance for this condition. Therefore, it is likely that the SJRWMD will not issue the CUP until the FDEP NPDES permit is issued. The NPDES permit issuance will also confirm compliance with impingement/ entrainment regulations under Section 316(b) of the Clean Water Act.

The final criterion of issuance is for the applicant to demonstrate that the proposed use is consistent with the public interest. Because the proposed use is for public supply, it is consistent with the public interest. In addition, the applicant's demonstration that the other two conditions of issuance have been met serves to provide reasonable assurance that the proposed use is consistent with the public interest.

The SJRWMD's rules also indicate that a proposed consumptive use will not be considered to meet the criteria for issuance of a permit if the use will:

1. Significantly induce saline water encroachment;
2. Cause the water table or surface water level to be lowered so that stages or vegetation will be adversely and significantly affected on lands other than those owned, leased or otherwise controlled by the applicant;
3. Cause the water table or aquifer potentiometeric surface level to be lowered so that significant and adverse impacts will affect existing legal users;
4. Require the use of water which has been reserved from use by permit;
5. Cause the rate of flow of a surface watercourse to be lowered below any minimum flow; and

6. Cause the level of a water table aquifer, the potentiometric surface level of an aquifer, or the water level of a surface water to be lowered below a minimum level.

The SJRWMD does not currently have any reservations set for coastal waters; therefore, Number 4 above is not anticipated to be an issue. Items 1 through 3, 5, and 6 would not be an issue for a submerged ocean intake. For beach wells, each of these issues would be addressed as part of the impact assessment and possible groundwater analysis previously discussed.

7.2.5. Water Transfers

The service areas of the participants in Phase 2A are all within the SJRWMD, therefore state regulations related to the transfer of water between water management districts (e.g., Interdistrict Transfers) would not need to be address as part of the project. However, if new participants that have service areas located outside the SJRWMD join the Project during Phase 2B, Interdistrict Transfer regulations may need to be addressed.

Though all within the SJRWMD, the Project Partners are distributed across several counties. As a result, Chapter 373.223(3) regarding the transfer of water across County boundaries, commonly referred to as Local Sources First regulations, may need to be addressed as part of the CUP for the project. Local Sources First requires an evaluation to determine that the transport of ground or surface water across county boundaries is consistent with the public interest. If applicable, the Local Sources First evaluation is to consider the following:

1. The proximity of the proposed water source to the area of use or application.
2. All impoundments, streams, groundwater sources, or watercourses that are geographically closer to the area of use or application than the proposed source; and that are technically and economically feasible for the proposed transport and use.
3. All economically and technically feasible alternatives to the proposed source, including, but not limited to, desalination, conservation, reuse of non-potable water such as reclaimed water and stormwater, and aquifer storage and recovery.
4. The potential environmental impacts that may result from the transport and use of water from the proposed source, and the potential environmental impacts that may result from use of the other water sources identified in paragraphs (b) and (c).
5. Whether existing and reasonably anticipated sources of water and conservation efforts are adequate to supply water for existing legal uses and reasonably anticipated future needs of the water supply planning region in which the proposed water source is located.

6. Consultations with local governments affected by the proposed transport and use.
7. The value of the existing capital investment in water-related infrastructure made by the applicant.

In general, the demonstration of need, which includes a demonstration that water conservation, reclaimed water reuse, and other lower quality sources are all being utilized to the extent economically, environmentally, and technologically feasible, submitted in support of the CUP application will address many of the Local Sources First considerations. However, additional evaluation or alternatives analysis that shows that other alternative water sources, such as consideration of surface waters that are located within each participant's water supply planning area, may need to be submitted.

7.2.6. Governance

The Project's final governance structure will influence the CUP process. Several potential options for the Project CUP as they relate to possible governance options are presented below.

1. Joint Project Ownership: The Partners could submit a joint CUP application in which they are all considered the primary CUP holder. In this case, the Suppliers would work together to develop the information and analyses required in support of the CUP.
2. Ownership by a Single Supplier: A single supplier could own the raw water facilities and treatment plant and be the primary CUP holder for the project. The other participants would obtain secondary CUPs related to the primary CUP for the project. In this instance, each individual participant would be required to provide the demonstration of need (e.g., water demand projections, water conservation, reclaimed water reuse, and use of other lower quality sources), but the primary CUP holder would take responsibility for the impact assessments required in support of the CUP application.
3. Authority: The participants could form a water authority to own and operate the project. In this case, the water authority would obtain the primary CUP and all of the authority members would obtain a secondary CUP.

Other governance structures may exist and be implemented as part of the Project. The structure of the CUP would need to be determined on a case-by-case basis if other governance structures were implemented.

7.2.7. Conjunctive Use

Conjunctive use is the management of multiple water sources to meet demands. The participants all currently utilize groundwater as their sole water source to meet potable water demands. As the participants implement a second source as part of the Project, conjunctive use will be an important consideration for the permitting, design, and operation of their facilities.

The participants' groundwater sources have the ability to meet peak demands. The Project is currently contemplated to be a base-load facility where the facility capacity is equal to the projected annual average demand for the project with no significant ability to meet peak demands. Potential options to meet peak demands associated with the Project include storage such as reservoirs and aquifer storage and recovery (ASR), implementation of other new sources such as surface water, or the utilizing existing groundwater sources. Currently, the Project envisions utilizing the participants' existing groundwater sources to meet peak demands or to meet supply due to unforeseen events.

Utilizing groundwater to meet peak demands has both seasonal and annual implications that may need addressing as part of the implementation of the Project. During Florida's dry season or periodic droughts, demands can be significantly above long-term annual average and exceed the capacity of the proposed desalination plant. It is currently envisioned to utilize groundwater to meet these peak demands. However, utilizing existing groundwater sources to meet peak demands associated with the Project will result in an increase in the Suppliers' annual average groundwater use (i.e., peak use will increase once the Project comes on line). Once the Suppliers are utilizing their full allocation to meet the demands of the population associated with that allocation, using groundwater to meet peak demands of the Project could result in the Suppliers exceeding their groundwater allocations.

One permitting strategy involves modifying the participants' groundwater permits to allow flexibility to use groundwater to protect public health and safety during dry periods, droughts and unforeseen events. Such flexibility would allow varying pumping rates, with higher quantities during peak demand periods and lower quantities during periods of below average demand (e.g., periods of above average rainfall) This flexibility would allow participants to meet the peak demands , protect public health and safety, and stay within their permit limits. Current SJRWMD's CUPs no longer include maximum day allocations, so modifications to the existing CUPs are not immediately necessary. However, they may be required during future CUP renewal or modifications. The SJRWMD has historically based their CUP allocations on an annual average impact analysis (e.g., steady-state groundwater flow modeling). The SJRWMD is beginning to

look at impact analyses on a transient basis and in some cases are developing transient groundwater flow models to perform impact analyses. If the SJRWMD incorporates transient impact analyses into the SJRWMD Applicant Handbook, the potential impacts of increased peak groundwater pumping on a transient basis could become limiting. This could hinder the Suppliers from increasing their seasonal pumping to meet peak demands. In addition to potential modifications to the Suppliers' existing CUPs, this type of conjunctive use scenario could result in the Suppliers needing to expand the capacity of their existing groundwater facilities (e.g., treatment, diurnal storage, and high service pumping) and associated FDEP operating permits.

The difficulty with the above-described conjunctive use strategy is that it can possibly result in supply shortages the alternative water sources does not have "excess" water available during periods of above average rainfall (e.g., a surface water source). Under the above strategy, groundwater would be pumped at rates higher than historically implemented during the dry season (or during drought conditions) to meet peak demands that may not be able to be met from a potentially baseloaded alternative water supply facility. If groundwater is relied on more heavily during period of below average rainfall, it will need to be pumped at rates lower than historically implemented in order to stay within the annual average groundwater allocations of the participants existing CUPs. In other words, the annual average amount of groundwater used to meet demands would be the same under a conjunctive use scenario as under a more traditional pumping scenario, but the variability of use throughout the year could be notably different. If groundwater is used less than normal during the wet season, the alternative water supply source will need to be used to make up the demand no longer being met by groundwater (in addition to the demand that would have needed to be met by the alternative water supply source). However, if there is not "excess" alternative water supplies available during these times, a supply shortfall could occur. The ocean has "excess" water available; however, if the treatment facilities are designed to accommodate long-term annual average conditions (i.e. a base loaded facility), then the project may not be able to produce and deliver enough water (e.g., groundwater plus desalinated seawater) to meet demands on the system during all climatic conditions without exceeding the capacity and/or permitted allocation of one or more of their facilities. Having sufficient sources to meet demands during all weather conditions could be a challenge under this type of strategy, but may be viable in the short to medium term before build out conditions are approached.

Potential options to address the above issues are as follows:

1. Work with the SJRWMD to identify additional groundwater sources and modify the participants' existing groundwater permits to include additional allocations to meet peak demands (e.g., supplemental supply).

2. Identify additional new sources to meet projected supply deficits during seasonal periods of peak demands, drought conditions and unforeseen events. The timing of new sources may be affected by the annual variation in climate.
3. Implement seasonal storage such as a reservoir or aquifer storage and recovery (ASR).
4. Work with the SJRWMD to develop a CUP that considers the conjunctive use of water with no increase in the Suppliers' existing groundwater allocation. This would likely involve limiting conditions that specify a maximum annual allocation for each source, but also an overall allocation for all sources that is less than the sum each individual source allocation. This effectively results in the Project facilities being designed with some peaking capability because the facilities would not be used at their design capacity every year. The SJRWMD has issued a CUP of this nature to the City of Cocoa.

The above options are considerations for conjunctive use; however, more detailed analyses are required for each Supplier to determine how each source will be operated conjunctively with one another and what specific CUP or facility modifications will be necessary.

7.2.8. Schedule and Fees

There are two potential schedules associated with submitting a CUP application(s). The first option is to submit the CUP application(s) after the preliminary design report is developed, but before the final design of the facility begins. This strategy is to assure that a CUP is obtained before finances are expended on the design. The second option is to develop and submit the CUP in parallel with the design of the project. This strategy puts the finances associated with design at risk since there is a possibility the CUP would not be issued for a variety of reasons.

At a minimum, the CUP needs to be submitted after the preliminary design report is developed because the general location and type of intake that will be utilized for the project needs to be included in the CUP. This is necessary to determine the type of analyses that will be required in support of the CUP as discussed previously. However, the land associated with the intake does not need to be under the control of the applicant at the time the CUP is submitted.

Overall, based on discussions with the SJRWMD, it is anticipated that obtaining a CUP for the project will take approximately two to three years assuming that the FDEP NPDES permit is issued during that time.

A CUP for beach wells can be up to 20-years in duration and are renewable. A CUP for an open sea intake can be considered for up to 50-years in duration depending on the supporting documentation provided. SJRWMD individual consumptive use permits (requested allocation greater than 500,000 gallons per day) for a new use or a modification of an existing use with an increase in allocation are $1,000. Individual consumptive use permit renewals or modifications with no increase in allocation are $200.

The primary CUP for the Project will have a fee of $1,000. Any necessary modifications to existing participants' groundwater CUPs are also likely to have a fee of $1,000 for each Supplier.

It is important to note that the current CUP application fees presented above are subject to change based on future rule modifications.

7.3. Beach Wells

7.3.1. Hydrogeology Implications

As part of the CUP application, a detailed evaluation will need to be conducted on the regional and local geology/hydrogeology of the selected site for the beach well system. In addition, it is anticipated that SJRWMD will require that an aquifer performance test be conducted at the selected beach well site and that data associated with this testing be provided in support of the CUP application. Aquifer performance testing is also needed to determine the aquifer system hydraulic properties, water quality, and overall yield of the system. Based on a meeting held with SJRWMD in February 3, 2011, it appears that groundwater flow modeling will not be necessary for this CUP application, even thought the beach well system will be completed within the Surficial Aquifer system. This is because the beach well system will be withdrawing salt water from the aquifer system, and that the aquifer system will be directly recharge by the Atlantic Ocean. In addition, SJRWMD regional groundwater flow model does not extend to the Atlantic Ocean coast line where the beach well system will be installed.

At this time, it is anticipated that radial collector wells will be the primary option, if beach wells are included in the project. Radial collector wells typically have higher pumping capacities and require less maintenance than vertical wells. As a result, fewer wells will be needed to achieve the desired yield for the system. The design and anticipated permitting requirements of the radial collector wells are provided below.

Well Construction

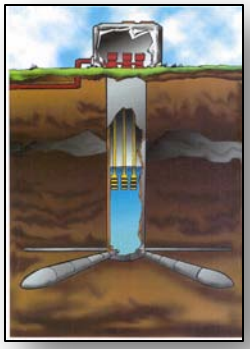


Figure 7.1: Example of a Radial Collector Well

It is anticipated that radial collector wells will be utilized as the source water system for the beach well option. Radial collector wells consist of a caisson that is sunk to the desired depth and lateral screens that are projected from near the base of the caisson into the aquifer (**Figure 7.1**). In this case, the lateral screens will be projected toward the Atlantic Ocean in three to four directions away from the beach ridge. Each lateral will be 150 to 200 feet long.

Prior to the design and installation of the radial collector wells, a detailed hydrogeologic study will be conducted at the selected well site(s). This study is needed to determine the yield of the selected site as well as expected water quality within the surficial aquifer system. Data from this detailed hydrogeologic study will also be used to fulfill requirements for the CUP application.

As part of the detailed hydrogeologic study, soil borings, vertical test pumping wells and observation wells will be installed along the beach ridge adjacent to the Atlantic Ocean. In addition, it is anticipated that a few monitoring wells will be needed on the west side of the Intracoastal Waterway to monitor potential affects from pumping on inland systems. The soil borings and monitoring wells will be used to collect geologic and hydrogeologic information at the selected site(s) and the test pumping wells and observation wells will be for aquifer performance testing. Based on conversations with SJRWMD, because water samples will be collected from the soil borings, a separate CUP will be required for the soil borings. A separate CUP also will be required for the test wells/observation well network. However, it appears that since the soil borings are of a similar design, separate CUPs will not be required for each boring. The same appears to be true for the test well/observation well systems. A separate well construction permit will need to be obtained from SJRWMD for each boring or well, and an abandonment plan will need to be filed with the District. The cost of each soil boring/well construction permit is $125.

In addition to the CUPs and well construction permits, a discharge permit will need to be obtained from the Florida Department of Environmental Projection (FDEP) for discharges related to development, sampling, and testing of the soil borings/wells. As part of the Marineland aquifer performance testing that was undertaken earlier this year, requirements for the discharge permit included the collection of water quality parameters (defined by FDEP) from the test well prior to discharging to the Atlantic Ocean. At the end of testing, a second set of water quality parameters were required from the discharge

water. All the water quality data is submitted to FDEP for their records. Although it was not needed for the Marineland pumping test discharge permit, it is likely that FDEP may require a generic NPDES discharge permit for the test wells and radial collector wells. There is a $100 fee for each generic NPDES permit plus the cost for laboratory services.

It is anticipated that special conditions may be included in the beach well system CUP. A special condition associated with the CUP may be the testing of the radial collector wells and providing aquifer performance and water quality information to SJRWMD once they are installed. Because conducting pumping tests on the radial collector wells will be necessary to confirm their performance characteristics, water quality conditions, and to understand the affects of pumping of the well on the local groundwater system, these testing requirements will be built into the design of the well. The results will be provided to SJRWMD as directed. In addition, SJRWMD will require that the boring logs and well completion information be provided to staff.

Similar to the test wells, an FDEP discharge permit will be needed prior to testing of the radial collector well. It is anticipated that this will be a generic NPDES permit and that water quality sampling will be required to support the permit. As stated above, the cost of the NPDES permit is $100, plus the cost of the laboratory services. The cost of the well construction permit through SJRWMD will be $250 per well. Once the radial collector well is installed, the screen laterals, caisson, and pumping equipment will need to be disinfected and operation of the well approved by the local health department. Because the location of the wells had not been determined, the health department with jurisdictional authority is unknown at this time.

Based on the above discussion, the following permits and submittals will be required for the detailed hydrogeologic investigation and the beach well system.

- Separate SJRWMD CUP for soil borings;
- Separate CUP for test wells;
- CUP for radial collector wells (beach well system);
- SJRWMD construction permit for the soil borings, test wells, and observations wells;
- SJRWMD construction permit for the radial collector wells;
- FDEP generic NPDES discharge permits for test wells;
- FDEP generic NPDES discharge permits for radial collector wells;
- Boring/well abandonment plan submitted to SJRWMD;
- Boring logs and well completion information submitted to SJRWMD; and

- Health Department or FDEP permit to operate the radial collector well.

The CUP for the beach well system will be part of the overall CUP for the desalination system. Information collected from the soil borings and test wells will support the beach well system CUP.

7.4. Pilot Testing Requirements

The pilot testing facility will include a sea water intake and discharge. The source of the sea water intake for the pilot testing has not been determined, but use of beach wells and an open sea water intake are being considered. Independent of the selected water source, SJRWMD has indicated that a CUP will be required. As the capacity of the pilot testing facility is anticipated to be greater than 100,000 gallons per day, the CUP application requirements will be the same as described in Section 7.1. The SJRWMD has not determined whether a full CUP or a temporary CUP (TCUP) will be required. The full CUP process will follow the requirements as outlined in this section. The TCUP will require documentation that the temporary use of water will not have any adverse impacts on the water body and must adhere to Section 373.223, Florida Statutes. The application process for the TCUP is similar to the CUP application process. The requirements outlined in Section 7.3 apply for the use of a deep or shallow open water intake.

For the use of newly constructed beach wells, the permitting requirements of Section 7.2 will apply. An alternative to the construction of a new beach well is to use an existing beach well. There is an existing well, located on Marineland property that is included in the Marineland CUP that is not currently in use. There is potential to use this well for the pilot testing procedures. Use of this well within the existing permitted allocations for Marineland would not require the acquisition of a new permit or modification of the existing. If the existing well can be used, but withdrawal volume will exceed the existing Marineland CUP, a modification to the existing CUP will be required. Marineland has been recently acquired by the Georgia Aquarium and additional coordination with the new owners will be required to verify that use of the facility is allowed.

8. Additional Permitting Requirements

8.1. Land Development

The site selected for the development of the treatment plant will require a County Land Development Permit. The application will need to include County zoning approval together with an approved storm water management plan, which is generally satisfied by an approved ERP issuance. The application will need to include plans showing landscaping, buffer zones and access routing. While the location of the facility is not yet known the application fee for Flagler County, for example, is currently $550 plus $525 per acre.

8.2. Wastewater Permits

Effluents from membrane clean-in-place operations and domestic wastewater systems will likely be discharged to the local municipal sewer system. A permit will be required under Chapter 62-604, F.A.C. for construction of the necessary collection and transmission system. In the unlikely event that on-site treatment is necessary, a permit under Chapter 62-600 for domestic wastewater facilities will be required.

8.3. Other Permitting Requirements

On-shore pipelines to be located in county or city right-of-way will require Right-of-Way Use permits.

The Contractor for the construction of the plant will need to apply for other permits prior to construction, such as a building permit and a storm water pollution prevention plan from the accommodating County. In addition, the plant site would also be subjected to a variety of investigations for sensitive resources (e.g., wetlands, endangered species) as well as archaeological and cultural resources. Similarly, the selected transmission route would be subjected to similar environmental screening and subsequent permitting as necessary.

9. Summary and Conclusions

The Coquina Coast Project will likely fall under the requirements of National Environmental Policy Act (NEPA), based on one or more of the following scenarios:

- A USEPA decision to enable funding under the Special Appropriations Act Project program for water infrastructure projects.
- A decision by the U.S. Army Corps of Engineers to issue a permit for filling waters of the United States.
- Application for an NPDES permit beyond 3 miles offshore, which would be permitted by USEPA (as opposed to FDEP).

All federal agencies are bound to NEPA and must satisfy all its applicable requirements in the administration or their programs and policies. At the outset, this will require an initial Environmental Information Document (EID) to be prepared by for the Coquina Coast Project, should the requirement be triggered by a Federal agency.

USEPA will review the EID and makes a determination as to whether or not the project qualifies under NEPA for a Categorical Exclusion. If it does not, USEPA will review and comment on the EID before making an "environmental determination". If no significant impact, are foreseen, USEPA will prepare an Environmental Assessment and renders a Finding of No Significant Impact. If significant impacts are envisioned at the conclusion of the EID, USEPA can bypass the EA step and proceed directly to an Environmental Impact Statement (EIS). Preparation of an EID will typically require 4 to 6 months to complete. If the EID is followed by an EA, a further period of 6 to 9 months is anticipated, which would typically increase to 12 to 18 months if a full EIS is determined necessary after consideration of the EID.

Florida's ERP permit requirements are designed to ensure no adverse effect to the land or aquatic environment during and after construction of a facility. The ERP requirements, as summarized in Florida Administrative Code Chapter 62-330, ensure compliance with various Acts, including but not limited to the Clean Water Act and Endangered Species Act. The USACE issues permits under Section 404 of the Clean Water Act, and will cooperate with FDEP during the ERP process review together with US Coast Guard, NOAA NMFS and USFWS. The permit applicant will need to ensure that waters of the United States are not impacted adversely by construction or permanent activities. Discussions with FDEP indicate a minimum two year period will be required from application before approval is given. A period of approximately 12 months will be

required to gather data and survey information and complete the application prior to submittal.

The proposed facility construction will require the submittal of a permit application to FDEP entitled “Application for a Specific Permit to Construct PWS Components”. The permit is required to ensure protection of public health, safety, and welfare, from any construction, modification, or operation of a public drinking water system. The application will include assurance of water quality standards by reference to the entire treatment process from the source through the distribution system.

The NPDES process includes a data collection period for hydrodynamic studies to monitor current, salinity, temperature, wave, wind, water level, suspended sediment concentration, turbidity, and bottom sediment type and composition over a period of approximately 18 months. The study and report is expected to take 24 months to complete. A water quality and data collection plan is required to be submitted to FDEP for review prior to finalization of the NPDES permit. As conditions for the issuance of the NPDES permit, base line marine biology must be established and toxicity testing must be carried out for a range of effluent salinity concentrations.

According to SJRWMD, a Consumptive Use Permit will be required whether the source water is obtained for either beach wells or open sea intakes located within 3 miles of the coastline. No Consumptive Use Permit will be required for an open sea intake beyond 3 miles of the shoreline. Based on discussions with the SJRWMD, it is anticipated that obtaining a CUP for the project will take approximately two to three years provided that the NPDES permit is issued during that time. CUP for beach wells will be renewable after 20 years, but a 50 year CUP will be requested for open sea intakes.

In conclusion, a minimum period of three years should be allowed for completion of the permitting process before bidding documents can be finalized for construction.

APPENDIX A

MEETING MINUTES WITH REGULATORY AGENCIES

Coquina Coast Seawater Desalination Project
EPP and Construction Permitting Meeting

Thursday, February 03, 2011, 9:00 a.m.

Florida Department of Environmental Protection
Conf Room A, 7825 Baymeadows Way, Jacksonville, 32256

MEETING MINUTES

1. Attendees

Name	Organization	Email
Roger Akerman	Malcolm Pirnie/Arcadis	roger.akerman@arcadis-us.com
Scott Shannon	Malcolm Pirnie/Arcadis	scott.shannon@arcadis-us.com
Laura Strach	Malcolm Pirnie/Arcadis	laura.strach@arcadis-us.com
Tom Richardson	Halcrow	richardsonTL@halcrow.com
Peter Anderson	UF Whitney	paa@whitney.ufl.edu
Ray Pribble	Janicki Environmental	rpribble@janickienvironmental.com
Randy Turner	USACE – Department of Army Permits	randy.l.turner@usace.army.mil
Dana Davis	UF Whitney	
Bill Wilson	SJRWMD	billwilson@sjrwmd.com
Jim Maher	FDEP – ERP Permitting	jim.maher@dep.state.fl.us
Connie Webel	FDEP – ERP Permitting	connie.webel@dep.state.fl.us
Brian Matthews	City of Palm Coast	bmatthews@palmcoastgov.com
Khalid Alnahdy	FDEP – wastewater	Khalid.alnahdy@dep.state.fl.us
Ray Sharp	City of Leesburg	ray.sharp@leesburgflorida.gov
Jeff Martin	FDEP – wastewater	jeff.martin@dep.state.fl.us
Glenn Forrest	SJRWMD – water supply	gforrest@sjrwmd.com
Blanche Waller	FDEP – Potable Water	blanche.waller@dep.state.fl.us
Melissa Long	FDEP – Water	Melissa.m.long@dep.state.fl.us
John Davis	FDEP – Potable Water/UIC	john.davis@dep.state.fl.us

1. Overview of the Coquina Coast Project
    a. Project Location –
        - *Reviewed the proposed study area, largely defined by the geography of the current project participants.*
        - *Location will be coastal areas of Flagler, southern St. Johns, and northern Volusia counties.*
    b. Project Partners –
    Currently Palm Coast, Leesburg, Deland, and St Johns County Utilities, though this lineup will probably evolve over the course of the project.
    c. Overview of Phase 2A efforts
        - *Water Supply/Quality Investigations and Pilot Test Planning*

- *Field Investigations – Bathymetry, Hydrodynamic, Hydrogeological*
- *Initial Ecological Studies – Identifying marine species*
- *Preliminary Siting Investigations*
- *Identifying Permit Requirements*

d. Project Schedule –
   - *Preliminary Design through 2014, Design/Construction through 2019, begin Operations in 2020.*
   - *These dates also subject to change based on participants and changing water demands.*

2. Application Processes
   a. Confirm FDEP Lead Agency
      - *Memorandum of Understanding – FDEP is the lead agency on this project as it is a drinking water application.*
      - *The ERP will be a one-stop shop for the application, but different requirements will result based on State and Federal guidelines.*
      - *Will require coordination with other agencies.*
      - *FDEP jurisdiction up to 3.0 miles from mean high water (MHW), thereafter EPA*
      - *USACE jurisdiction up to the continental shelf*
   b. ERP Schedule & Fee
      - *The preference by all agencies is that one ERP be submitted for the entire project including intake, concentrate, plant and distribution system. Would consider separate submittals if operational need was demonstrated*
      - *Time frame is estimated at up to 2 years. Monitoring will be required over I full year minimum, and can extend the time frame.*
      - *Application fee depends on footprint of the project, but is estimated to be in the tens of thousands of dollars.*
      - *Federal entities cannot issue a permit until the State issues their permit with the required water quality certification.*
   c. Other Permits and Requirements
      - *Beaches and Coastal Section – will required permit for anything crossing the Coastal Construction line (CCL), approximately 50 feet from the MHW. Contact is Tony McNeal*
      - *Beaches and Coastal ERP Section – Inquire about requirements for Joint Coastal Permit. This permit is usually for transportation of beach sand. FDEP is estimating that this permit will not be required, but should discuss with the Section anyway.*
      - *No permit is required for the bathymetry study*
      - *A separate ERP will be required for the geotechnical investigation. Will likely be a nationwide permit through USACE.*
      - *Will require a Dredge and Material Management Area (DMMA) for spoils from tunneling. Requirements include berm design, sizing,*

structural integrity. There are existing sites, but they are estimated to be full at the time of this project.

- *Submit scope of pilot testing in advance for review by FDEP Tallahassee*
- *The pilot plant itself will also require an ERP, though the review process for it should be much simpler and quicker.*

d. Coordinating Agencies
USACE will coordinate with other agencies related to offshore work, with particular regard to bury depths and structures above ocean floor. A meeting will be convened in Jacksonville with invites to the following, as appropriate:

- *US Fish and Wild Life Service (FWS)*
- *Florida Fish and Wildlife Conservation Commission (FWCC)*
- *National Oceanic and Atmospheric Administration (NOAA) – depth and location of structures*
- *US Coast Guard – for naviagable waters, depth and location of structures.*
- *US Navy/DOD – will be constructing a submarine target range off of the northeast coast of Florida. May interfere with our intake/concentrate structures.*
- *National Marine Fisheries (NMF)*
- *Florida Division of Historical Resources*
- *Consider shrimping industry, intake/concentrate may interfere with shrimping nets.*

e. Perform aggressive outreach to advocacy groups and citizens of concern.

3. Off-Shore ERP Considerations
All intake alternatives will be considered surface water as they are under direct influence (UDI).

a. Bathymetry and Depth Constraints
- *No permit is required for the bathymetry study*

b. Conduit Construction
- *The offshore conduit will transition from deep buried to near surface.*
- *Need to establish a depth for this transition through USACE*
- *A tunnel option for the deep buried section would allow intake and discharge conduits within a single structure with conduits directionally splitting at the terminal structure.*

c. Marine Biology/ Habitat
- *A water quality and data collection plan needs to be submitted to FDEP ahead of ERP application for review by FDEP Jacksonville and Tallahassee. Janicki Environmental will lead this task.*
- University of Florida will be compiling a list of species of interest/concern during this phase of the project. They will need to coordinate with FWS, FWCC, NOAA, NMF

d. Screened Intake/ Diffuser Discharge Structures
    - *Demonstrate that intake will not interfere with local wildlife (Gold Coast intake lower velocity than the current).*
    - *ERP and NPDES will be concerned with 305b requirements for entrainment and impingement.*
    - *Have to study the thermal gradient for ERP and NPDES.*
e. Other Acts for compliance:
    - *Clean Water Act*
    - *River and Harbors Act*
    - *Marine Protection Act*

4. Onshore Permitting Considerations
    a. 62-555(900) Specific Permit to Construct Potable Water System Components includes top of well to plant.
    b. Submit at the same time as ERP
    c. Submit pilot study with permit application
    d. Estimated fee $12,500
    e. Intercoastal Crossing:
        - *Intercoastal Crossing belongs to the USACE, but some areas are considered Sovereign Submerged Lands (SSL).*
        - *Advised to stay out of marine protection areas.*
        - *There are some existing DOT and FPL easements that may be used. Will need to stay clear of bridge pilings.*
    f. Treatment plant will be permitted as a surface water plant whether supply is from beach wells or open sea intakes

Coquina Coast Seawater Desalination Project
NPDES Permitting Meeting

Thursday, February 03, 2011, 11:00 a.m.

Florida Department of Environmental Protection
7825 Baymeadows Way, Jacksonville, 32256

MINUTES

Attendees

Name	Organization	Email
Roger Akerman	Malcolm Pirnie/Arcadis	roger.akerman@arcadis-us.com
Scott Shannon	Malcolm Pirnie/Arcadis	scott.shannon@arcadis-us.com
Laura Strach	Malcolm Pirnie/Arcadis	laura.strach@arcadis-us.com
Peter Sheng	UF Gainesville	peter@coastal.ufl.edu
Tom Richardson	Halcrow	richardsonTL@halcrow.com
Ray Pribble	Janicki Environmental	rpribble@janickienvironmental.com
Brian Matthews	City of Palm Coast	bmatthews@palmcoastgov.com
Ray Sharp	City of Leesburg	ray.sharp@leesburgflorida.gov
Khalid Alnahdy	FDEP – wastewater	Khalid.alnahdy@dep.state.fl.us
Jeff Martin	FDEP – wastewater	jeff.martin@dep.state.fl.us
Glenn Forrest	SJRWMD – water supply	gforrest@sjrwmd.com
Blanche Waller	FDEP – Potable Water	blanche.waller@dep.state.fl.us
Melissa Long	FDEP – Water	Melissa.m.long@dep.state.fl.us
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D. Vo	FDEP – Drinking Water	dung.vo@dep.state.fl.us
Robert Martin	FDEP – groundwater/UIC	Robert.martin@dep.state.fl.us
Drew Brown	FDEP – NPDES	drew.s.brown@dep.state.fl.us

1. Overview of the Coquina Coast Project
    a. Project Location –
        - *Reviewed the proposed study area, largely defined by the geography of the current project participants.*
        - *Location will be coastal areas of Flagler, southern St. Johns, and northern Volusia counties.*
    b. Project Partners –
    Currently Palm Coast, Leesburg, Deland, and St Johns County Utilities, though this lineup will probably evolve over the course of the project.
    c. Overview of Phase 2A efforts
        - *Water Supply/Quality Investigations and Pilot Test Planning*
        - *Field Investigations – Bathymetry, Hydrodynamic, Hydrogeological*
        - *Initial Ecological Studies – Identifying marine species*

- *Preliminary Siting Investigations*
- *Identifying Permit Requirements*

d. Project Schedule –
   - *Preliminary Design through 2014, Design/Construction through 2019, begin Operations in 2020.*
   - *These dates also subject to change based on participants and changing water demands.*

2. NPDES Application Process
   a. Confirm FDEP Lead Agency
      - *FDEP is the lead/only agency on NPDES*
      - *Jurisdiction end 3.0 miles from mean high water (MWH), with EPA responsible beyond 3 miles.*
      - *Concentrate classified as industrial waste, not subject to outfall ban.*
      - *FDEP SW District may be asked to comment as they have experience with Tampa Bay Water.*
   b. Schedule
      - *1 to 2 year time for combined review (Water Section for the plant and Wastewater Section for the concentrate).*
      - *Permit is required prior to construction.*
   c. Fee
      - *$15,000*
3. Concentrate Disposal
   a. Hydrodynamic Modeling
      - *Will need study – submit preliminary scope to FDEP for review of study items ahead of permit application. Jax office will send to Tallahassee to review*
      - *Will model toxicity, mixing, scouring, turbidity, ocean currents, tides, waves, wind, hurricanes, salinity, seasons.*
      - *Could start without local current data. Would have to verify national data is adequate for today.*
      - *Identify the worst condition. Is that stagnant, near field/far field, etc.*
      - *Need to allow for enough time to consider seasons, high/low tide. Peter Sheng recommended 18 months.*
      - *Full estimate of metals and toxicity (list located in 62-4 and application form)*
      - *Estimates and pilot data*
      - *Class III marine, water quality standards*
      - *Mixing zone will depend on exact location (Rule 62-4)*
      - *Will determine later if it is acute or chronic toxicity*
      - *Coordinate with Kim Pierce (toxicity coordinator). She will be able to determine what species to use in the testing.*
      - *Will perform an ion imbalance study*

- *FDEP will look for recent studies on the southeast coast, including DERM, Broward, Hollywood. Crystal River Nuclear Power Plant just did a study on thermal gradient.*

b. Marine Biology/ Habitat
   - *Need study to identify base line marine biological conditions, including seagrasses etc, 2/3 years before operation of the plant*
   - *Study scope to be submitted to FDEP ahead of permit application for review by Jax and Tallahassee.*

c. Water Quality
   - *Subsurface discharge could be considered UIC (usually aquifer with TDS <10,000)*
   - *Likely TDS in aquifer below ocean is >10,000*
   - *Still may have toxicity issues*
   - *Need study of geology of ocean floor*

d. Water Quantity
   - *Plant capacity will likely be in 10 to 25 MGD range*
   - *Discharge will be approx 50% greater than treatment capacity*

4. Screened Intake
   a. Impingement/ Entrainment rules will need to be addressed (this relates to discharge of intake screenings

5. Pilot Testing
   a. Duration minimum 15 months
   b. Discharge Permit required if to surface waters (preferred choice), or surficial saline aquifer
   c. TDS concentration will be identical to source water

Coquina Coast Seawater Desalination Project
CUP Permitting Meeting

Thursday, February 03, 2011, 2:00 p.m.

St Johns River Water Management District
4049 Reid St, Palatka, 32177

MINUTES

Attendees

Name	Organization	Email
Roger Akerman	Malcolm Pirnie/Arcadis	roger.akerman@arcadis-us.com
Scott Shannon	Malcolm Pirnie/Arcadis	scott.shannon@arcadis-us.com
Laura Strach	Malcolm Pirnie/Arcadis	laura.strach@arcadis-us.com
Rick Cowles	Malcolm Pirnie/Arcadis	richard.cowles@arcadis-us.com
Ray Pribble	Janicki Environmental	rpribble@janickienvironmental.com
Brian Matthews	City of Palm Coast	bmatthews@palmcoastgov.com
Ray Sharp	City of Leesburg	raysharp@leesburgflorida.gov
Rob Denis	Liquid Solutions Group	rdenis@liquidsolutionsgroup.com
Todd Eller	SJRWMD	teller@sjrwmd.com
Glenn Forrest	SJRWMD	gforrest@sjrwmd.com
Jay Lawrence	SJRWMD	jlawrence@sjrwmd.com
Warren Zwanka	SJRWMD	wzwanka@sjrwmd.com

1. Overview of the Coquina Coast Project
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        - *Field Investigations – Bathymetry, Hydrodynamic, Hydrogeological*
        - *Initial Ecological Studies – Identifying marine species*
        - *Preliminary Siting Investigations*
        - *Identifying Permit Requirements*
    d. Project Schedule –
        - *Preliminary Design through 2014, Design/Construction through 2019, begin Operations in 2020.*
        - *These dates also subject to change based on participants and changing water demands.*

2. CUP Application Process
    a. Need and justification for CUP (offshore vs beach wells)
        - *Use of beach wells will require a CUP*
        - *For Ocean Intake, assume that a CUP will be required. SJRWMD Office of general Counsel is still deciding on this issue and will respond early April 2011.*
    b. FDEP/SJRWMD Coordination
        - *Jurisdiction of SJRWMD and FDEP end 3 miles from mean high water (MHW).*
        - *SJRWMD will be lead on CUP.*
    c. Relationship to NPDES permitting
        - *A valid NPDES will suffice to comply with CUP criterion for no violation of state water quality standards in the receiving water body.*
        - *NPDES permit will cover impingement/ entrainment rules.*
    d. Existing CUPs
    e. Permit Schedule and Duration
        - *2 to 3 years duration before CUP issuance*
        - *For construction in 2015 and operation in 2020, submit permit 2013/ 2014.*
        - *Requesting 20 year permit for beach wells and 50 year permit for ocean intake (SJRWMD is investigating this issue)*
        - *A valid NPDES will suffice for degradation requirements/receiving body criteria.*
        - *NPDES permit should be acquired first*
    f. Fee
        - *$1,000 CUP*
        - *$250/well for public supply wells*
        - *$125/well for temporary boring*

3. Screened Off-Shore Intake
    a. Land Issues
        - SJRWMD does not care whether intake structure is covered by CUP or ERP or NPDES (impingement/entrainment), as long as it is covered.
        - A submerged land lease may be required for an ocean intake
    b. Modeling Requirements
        No modeling will be required for an open sea intake for CUP.

4. Beach Wells
    a. Land Issues
        Wells to be constructed on sand ridge - min 50’ back from HWL.
    b. Modeling Requirements
        - *Cannot modify existing fresh water model for surficial aquifer*

- *There is no existing model for sea water drawdown*
- *The surficial aquifer is considered an infinite source and should not require hydro-geological modeling*

c. Water Quality
- *May need monitoring of pre-development condition (saltwater and freshwater)*
- *Baseline water quality (ion analysis) in fresh water aquifer will be provided by SJRWMD*
- *Likely require monitoring of surficial aquifer as part of CUP.*
- *R. Cowles requested a map of freshwater lens on barrier islands.*

d. Water Quantity

Initial plant production capacity may be between 10 MGD and 25 MGD, which requires equivalent source water withdrawal up to 2.5 times these quantities.

5. Well Construction Permit
- *Separate construction permits will be required for test and monitor wells (SJRWMD). If wells are of similar construction, they can be incorporated onto one permit.*
- *Separate CUP will be required for pumping test wells (SJRWMD)*
- *Have to be approved by CUP for aquifer performance and testing plan.*
- *Potential Options*
  - *Start the "Big" CUP*
  - *Attain a separate CUP (ex. 3-year stand alone CUP for ASR testing)*
  - *TCUP from Palm Coast CUP*
- *May require a variance from normal production well requirements*

6. Pilot Testing
- *May be able to "piggy-back" on Marineland's CUP for pilot plant.*
- *If volume is within existing CUP, will not need additional.*
- *If we are removing water and returning to intake for dolphin tank, might not need CUP.*
- *Need to discuss permission with new owners of Marineland (Georgia Aquarium).*
- *Testing program will extend over 12 to 15 months*