URS

DOCKET	
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DATE	SEP 22 2011
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September 22, 2011

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814-5512

Re: Watson Cogeneration Steam and Electric Reliability Project
Application for Certification 09-AFC-1

On behalf of Watson Cogeneration Company, the applicant for the above-referenced Watson Cogeneration Steam and Electric Reliability Project, we are pleased to submit the following:

- Comments on the Final Staff Assessment.

This document is being submitted to the CEC for docketing.

In accordance with the CEC's June 10, 2011 Committee Order Adopting Filing and Electronic Documents Directives, one paper copy and one compact disc (CD) is being filed with the Dockets Unit. The Proof of Service distribution will receive CDs. Paper copies will be issued upon request.

Sincerely,
URS Corporation

C Kyle-Fischer

Cindy Kyle-Fischer
Project Manager

Enclosure

cc: Proof of Service List

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Comments on the
FINAL STAFF ASSESSMENT
APPLICATION FOR CERTIFICATION (09-AFC-1)

for Watson Cogeneration Steam and Electric Reliability Project

Submitted to:
California Energy Commission
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Sacramento, CA 95814-5504

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September 2011

Watson Cogeneration Company (09-AFC-1)
Applicant's Comments on Staff Assessment

I. INTRODUCTION

Watson Cogeneration Company (Watson or Applicant), hereby files the following comments on the Final Staff Assessment ("Staff Assessment") issued by the California Energy Commission ("Commission") on August 31, 2011 for the Watson Cogeneration Steam and Electric Reliability Project ("Watson Project"). We agree with the majority of the changes made to the Preliminary Staff Assessment, and these comments are focused on the new language in the Soil and Water section that has been added since the Preliminary Staff Assessment, and not previously commented on by Watson. Additionally, Watson provides one fact clarification that spans the entire Staff Assessment and one fact clarification to the Waste Management section.

The comments below are organized in two parts. Section II provides Watson's comments on new substantive requirements added to the Soil and Water section, and requested significant changes to proposed conditions of certification. In Section III, we provide requested editorial changes or factual clarifications to the Staff Assessment. Both Sections II and III provide citations for requested changes analyses or conditions in the Staff Assessment. The complete text of suggested deletions and additions to the Soil and Water section are provided in Attachment A.

II. COMMENTS ON SIGNIFICANT ISSUES OF CONCERN IN THE STAFF ASSESSMENT ANALYSIS AND CONDITIONS OF CERTIFICATION

A. Project operation should not be conditioned on execution of an agreement for reclaimed water between uncontrolled parties.

Watson receives all water supplies from the BP Carson Refinery ("BP Refinery"). Watson proposes to obtain reclaimed water for use at the Watson Cogeneration Facility, including the Watson Project, through the BP Refinery. It is Watson's understanding that the BP Refinery has been engaged in discussions with the West Basin Municipal Water District (WBMWD) to develop additional supplies of reclaimed water that would supply the BP Refinery and the Watson Cogeneration Facility, including the Watson Project. Watson is not a party to these discussions.

Watson requests removal of language in the Staff Assessment conditioning operation of the Watson Project on the success of an agreement for a reclaimed water supply between parties not subject to Applicant's control. Even assuming Watson were a party to a reclaimed water supply agreement with WBMWD, such a condition undeniably imparts a negotiating advantage upon the uncontrolled third-party, clearly impairing an applicant's ability to obtain a timely agreement with fair and economical terms and conditions.

Watson agrees that all five Watson Cogeneration Facility trains should be limited to a capped annual amount of freshwater, and that any supply over that capped amount must be reclaimed water if and when it becomes available. However, it should not be assumed that the Watson Cogeneration Facility will require water in excess of the freshwater cap, and as such, operation of the Watson Cogeneration Facility should not require a fully-executed contract for reclaimed water. Further, it would be impracticable for Watson to execute a contract for reclaimed water until such time as the BP Refinery has an available supply. The freshwater cap,

in and of itself, is sufficient incentive to secure the necessary reclaimed water supply for the five power trains when available.

Because Watson cannot control the parties negotiating the reclaimed water contract, it is unknown if or when a reclaimed water supply may become available to the Watson Project, and because the Watson Project is not required to use reclaimed water, Watson requests that the language in the following Conditions of Certification in the Staff Assessment be revised to remove a requirement that a fully-executed contract for reclaimed water be in place as a condition of Watson Project operation:

- SOIL&WATER-5;
- SOIL&WATER-7;
- SOIL&WATER-8; and
- Staff Assessment analysis at p. 4.9-41.

B. Project operation should not be conditioned on whether reclaimed water supplied to Watson is above and beyond reclaimed water supplies to the BP Refinery.

The Staff Assessment requires that reclaimed water supplied to the Watson Cogeneration facilities "be a supply above and beyond reclaimed water already being supplied to either Watson Cogeneration or the BP Refinery" (Staff Assessment, p. 4.9-1 and 4.9-50). Watson requests that language requiring reclaimed water incremental to that supplied to the BP Refinery be removed from the Staff Assessment as it exceeds the Commission's jurisdiction by attempting to regulate and obtain information on the amount of reclaimed water supplied to the BP Refinery. Although the Watson Project will provide additional process steam to the BP Refinery, the BP Refinery is a separate legal entity and an existing industrial facility that is not within the

licensing jurisdiction of the Commission, and the Commission cannot regulate or condition the circumstances under which the BP Refinery will operate.

Therefore, Watson requests that the following language in the Staff Assessment conditioning the Watson Project's use of reclaimed water on supplies of reclaimed water to the BP Refinery be eliminated:

- SOIL&WATER-5; and
- Staff Assessment analysis at pp. 4.9-1, 4.9-50.

C. Applicant's proposed annual freshwater use is reasonable and appropriately based on the eleven year (2000-2010) period.

Watson has proposed to cap freshwater use at all five Watson Cogeneration trains to the average acre-feet per year ("AFY") use at the existing four trains, resulting in no impact to freshwater resources by the addition of the Watson Project. As part of this proposal, Watson previously provided the Commission with eleven years of freshwater AFY use data. The Staff Assessment has instead chosen to apply an average based on the most recent three-years of Watson Cogeneration operation, reasoning, in part, that Watson has not explained why it chose the eleven-year average. In these comments, Watson reasserts our proposal to use an eleven-year period, and herein provides support for basing the average on this timeframe.

The period from 2000 to 2010 was the period of record for freshwater use available to Watson at the time Watson revised Section 5.5 (Water Resources) of the application, and Watson believes that this longer period more accurately captures the range of potential freshwater use at Watson Cogeneration. Application of the 2000-2010 average is appropriate because use of freshwater at the Watson Cogeneration facilities is dependent upon a number of variables and the most recent three years of data does not adequately capture the changing conditions that can

impact water use at the Watson Cogeneration facilities. Freshwater supply quality, ambient temperature, humidity, BP Refinery steam demand, and BP Refinery maintenance activities are some of the key variables impacting Watson Cogeneration's freshwater use.

Additionally, a primary objective of the Watson Project is also to improve reliability of steam supply to the BP Refinery, and a three-year average, by not capturing the high steam demand years and the full range of other variables, does not adequately support this primary objective.

For these reasons, Watson does not believe that the prior three-year period can possibly capture a reasonable average of freshwater use at the Watson Cogeneration facilities, and Watson requests the following portions of the Staff Assessment be revised to reflect the originally proposed eleven-year average:

- SOIL&WATER-5
- Staff Assessment at pp. 4.9-1, 4.9-13, 4.9-31, 4.9-32, 4.9-33, 4.9-34 4.9-35, 4.9-41, 4.9-45, 4.9-50, 4.9-54.

D. Condition on condensate return should be revised.

Condensate return to BP Watson is comprised of condensate from Watson Cogeneration and the BP Refinery's condensate system. Because Watson Cogeneration is not the sole steam supply source for the BP Refinery, the BP Refinery's condensate system will contain condensate that did not originate as steam from Watson Cogeneration. Condensate return may be augmented with water as a back-up supply, which can be metered and reported to the CPM with the annual compliance report that is required by Condition of Certification SOIL&WATER-5.

As such, Watson requests that Condition of Certification SOIL&WATER-9 be modified.

E. The Staff Assessment misinterprets CEQA Guideline § 15162 and the effect of the originally estimated freshwater use for the four trains.

The Staff Assessment states that "anticipated impacts for a currently proposed project should be compared to impacts analyzed in the original CEQA document," and notes the estimated freshwater use considered in the 1986 staff analysis for the four trains of the Watson Cogeneration Project. However, this portion of the analysis misinterprets the purpose of California Environmental Quality Act ("CEQA") Guideline § 15162, which provides factors to determine whether a subsequent EIR should be prepared. First, in Watson's case it has already been determined that a new CEQA equivalent document is necessary, and this guideline does not require anticipated impacts for a currently proposed project be compared against impacts analyzed in an original CEQA document, as represented in the Staff Assessment. Second, Watson's application for a fifth train is for a new and separate Commission Decision, which is not subsequent or supplemental to Commission's decision for the original four trains, and therefore Guideline § 15162 is not applicable. Third, comparison to the previously estimated freshwater use of the four trains is improper because the baseline for a CEQA analysis must be based on the "existing physical conditions in the affected area,… rather than the level of development or activity that could or should have been present according to a prior plan or regulation." (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal. 4th 310, 321, citing *Environmental Planning & Information Council v. County of El Dorado* (1982) 131 Cal. App. 3d 350, 354 [discussing application of CEQA Guideline §15125].) Fourth, Staff's Assessment assumes without support that a freshwater cap

higher than the analyzed estimated freshwater use for the four trains in 1986 results in a significant impact to other users.

Accordingly, Watson requests text be deleted at the following:

- Staff Assessment at p. 4.9-32

III. REQUESTED FACTUAL CLARIFICATIONS AND EDITORIAL COMMENTS

A. Entire Staff Assessment

1. The abbreviation of the project name should be changed to Watson Project.

The Staff Assessment abbreviates the Watson Cogeneration Steam and Electric Reliability Project as "BP Watson". This abbreviation incorrectly implies that the Applicant is BP, rather than Watson Cogeneration Company (Watson). This implication appears to be contributing to the Staff's ongoing confusion regarding the separation of ownership and operation between the Watson Cogeneration Facility (including the Watson Cogeneration Steam and Electric Reliability Project) and the BP Carson Refinery. Consequently, the Staff continue to propose Conditions of Certification that would improperly constrain the BP Carson Refinery operations, particularly with regard to soil and water resources. Watson requests that the abbreviation of Watson Cogeneration Steam and Electric Reliability Project be changed to "Watson Project."

B. Soil and Water Resources Section

1. WBMWD and BP Refinery have executed a Memorandum of Understanding to supply reclaimed water.

The Staff Assessment infers that negotiations between the BP Refinery and WBMWD have been unsuccessful up to this point. Although Watson is not a party to these negotiations,

Applicant respectfully disagrees and requests that the language in the Preliminary Staff Assessment be restored to better reflect that the parties have executed a memorandum of understanding acknowledging that they will develop additional supplies of reclaimed water to meet the needs of all five trains prior to increasing operation beyond the capacity of the freshwater cap. Accordingly, Watson requests modifications to the following:

- Staff Assessment: p. 4.9-8, 4.9-14, 4.9-31.

2. The Project's objectives are to supply additional steam, improve reliability of steam supplies, and produce electrical energy

In the "Project, Site and Vicinity Description" and "Project Operations Water Supply" sections, the Staff Assessment states that the Watson Project's primary objective is to supply additional steam to the BP Refinery. To clarify, supply of additional steam is only one of the Watson Project's objectives. Other central objectives are to improve reliability of steam supplied to the BP and to provide electrical energy. By voluntarily capping the freshwater use at pre-Project levels, the Watson Project would not be able to provide additional steam, but would be able to increase reliability and provide electrical energy. Accordingly, Watson requests modifications to the following:

- Staff Assessment: pp. 4.9-8, 4.9-31, 4.9-37.

3. Watson has provided data addressing groundwater impacts at the Project site in this proceeding.

In the "Soil and Groundwater Contamination" section, the Staff Assessment states that Watson did not acknowledge the existence of groundwater impacts at the Watson Project site. However, Watson's Phase I Environmental Site Assessment (filed as Appendix A to the Application for Certification) described subsurface contamination that was noted during an

earlier investigation. Also, Watson's October 2009 response to CEC Data Requests 37 and 39 describe BP Refinery's Cleanup and Abatement Order with the LARWQCB and describes the BP Refinery's ongoing assessment and remedial activities. The Staff Assessment states that Watson did not provide any data illustrating the locations and results of the ROST borings. However, Watson docketed this information on July 22, 2011, in their "Responses to June 30, 2011 LARWQCB Response to CEC Request for Participation." The Waste Management section of the Staff Assessment correctly acknowledges this submittal and lists the document in the reference section as "URS 2011d". Accordingly, Watson requests modifications to the following:

- Staff Assessment: p. 4.9-9, 4.9-10, 4.9-22.

4. Staff's discussion of the state of the State Water Project and the Colorado River is more appropriately placed under the Regional Setting Discussion.

The "Operation Impacts and Mitigation" section, under "Baseline Water Supply," addresses the state of the State Water Project and Colorado River, which supply water for the Carson area. This material is more appropriately categorized under "Regional Setting," under "Regional Water Resources," where the two sources of imported water are first mentioned. This requested change includes moving material found on pages 4.9-33 to 4.9-35, to page 4.9-5.

C. Waste Management Section

In the discussions of "Existing Site Conditions and Potential for Contamination" and "Response to Agency and Public Comments," the Staff Assessment states that Paul Cho of the LARWQCB attended the January 25, 2011 CEC Workshop and that he expressed opinions regarding the need for additional characterization. However, Mr. Cho did not attend the

workshop, and the workshop participation and the associated opinions should be attributed to Mohammad Zaidi. This misstatement is found on pages 4.13-11 and 4.13-17.

IV. SUGGESTED REVISIONS TO THE STAFF ASSESSMENT

The Soil and Water Resources section with suggested revisions noted in track changes is included in Attachment A.

ATTACHMENT A

APPLICANT'S REQUESTED MODIFICATIONS TO

THE SOIL & WATER SECTION OF THE

FINAL STAFF ASSESSMENT

SOIL AND WATER RESOURCES

Testimony of Mark Lindley, P.E.

SUMMARY OF CONCLUSIONS

The California Energy Commission (Energy Commission) staff has not identified any immitigable potentially significant impacts to Soil and Water Resources for Watson Cogeneration Steam and Electric Reliability Project (~~BP~~ Watson Project) ~~Project~~ and believes that the ~~BP Watson project~~Watson Project would comply with all applicable Laws, Ordinances, Regulations and Standards (LORS) provided the proposed conditions of certification are implemented.

Energy Commission staff concludes the following:

- Implementation of Best Management Practices during the ~~BP Watson project~~Watson Project construction and operation in accordance with effective Storm Water Pollution Prevention Plans, a Drainage Erosion and Sediment Control Plan, and Standard Urban Stormwater Management Plan would avoid significant adverse effects that could otherwise result in significant transport of sediments or contaminants from the site by wind or water erosion.
- Capping combined freshwater use at rates at or below ~~4,219~~4,609 AFY for both ~~BP Watson~~the Watson Project and the existing Watson Cogeneration Steam and Electrical Generating facility (Watson Cogeneration) would result in no net increase of combined pumped groundwater and purchased municipal freshwater use associated with the ~~BP Watson Project~~Watson Project.
- The combined cap over freshwater use at ~~BP Watson~~the Watson Project and Watson Cogeneration is based on recent freshwater use at Watson Cogeneration, with the period of record consisting of the ~~three~~ eleven most recent years (~~2008~~ 2000 – 2010) being the most representative of baseline conditions in the water basin.
- Any water use at the combined ~~BP Watson~~Watson Project and Watson Cogeneration projects above the capped ~~4,219~~4,609 AFY shall be reclaimed water produced by~~from~~ a local waste water treatment facility~~, and shall be a supply above and beyond reclaimed water already being supplied to either Watson Cogeneration or the BP Refinery~~. Staff finds that the use of reclaimed water associated with the ~~BP Watson project~~Watson Project is consistent with Energy Commission Policy and the California Water Code.
- Condensate return to ~~BP Watson~~the Watson Project from Watson Cogeneration or the BP Refinery shall be from steam supplied from ~~BP Watson~~the Watson Project or Watson Cogeneration, and shall not be augmented with additional freshwater at Watson Cogeneration or the BP Carson Refinery.
- The project would not be located within the 100-year flood plain, and would not increase flood conditions downstream of the project.
- The discharge of wastewater under the conditions stipulated in the BP Carson Refinery's Industrial Wastewater Discharge Permit would meet Los Angeles County Sanitation District's wastewater standards.

- At the Preliminary Staff Assessment Workshop in January 2011, the LARWQCB presented data that indicates that there is up to 14 feet of floating non-aqueous phase hydrocarbons on the groundwater surface at the project site and indicated that there may be a source area at the project site. These site conditions and potential impacts are addressed in the Waste Management section of this analysis.

Where the project as proposed would cause significant impacts, staff is proposing mitigation measures to reduce the impact to less than significant. The mitigation measures, as well as specifications for LORS conformance, are included as conditions of certification.

INTRODUCTION

This section analyzes potential impacts to soil and water resources from the construction and/or operation of the ~~BP Watson project~~Watson Project proposed by the Watson Cogneration Company). The analysis specifically focuses on the potential for the project to cause impacts in the following areas:

- Whether the project's use of water would deplete existing supplies and impact current users or the environment.
- Whether project construction or operation would lead to degradation of surface or groundwater quality including through the alteration of runoff patterns.
- Whether construction or operation would lead to accelerated wind or water erosion and sedimentation including through the alteration of runoff patterns.
- Whether the project would increase runoff or otherwise exacerbate flood conditions in the vicinity of the project.
- Whether the project would comply with all applicable LORS (including Waste Discharge Requirements).

Where the potential for impacts are identified, California Energy Commission (Energy Commission) staff has proposed mitigation measures to reduce the significance of the impact, and as appropriate, has recommended conditions of certification.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Federal, state, and local LORS that apply to the ~~BP Watson project~~Watson Project related to soil and water resources are summarized below in **Soil and Water Table 1**. Energy Commission staff has reviewed the project as proposed by the Watson Cogeneration Company to determine if the proposed project will meet the requirements set forth in the federal, state, and local LORS.

Soil & Water Table 1
Laws, Ordinances, Regulations, and Standards

Federal LORS	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act (33 USC § 1251 et seq.) allows states to set standards to protect water quality, which includes regulation of stormwater and wastewater discharges during construction and operation of a facility. California established its regulations to comply with the Clean Water Act under the Porter-Cologne Water Quality Control Act of 1967. These are normally addressed through a general National Pollutant Discharge Elimination System (NPDES) permit. For ~~BP Watson~~the Watson Project, regulation of water quality is administered by the Los Angeles Regional Water Quality Control Board (LARWQCB).
Resource Conservation and Recovery Act	The Resource Conservation Recovery Act (RCRA) of 1976 (42 USC § 6901 et seq., implemented at 40 Code of Federal Regulations (CFR) Part 260 et seq.) seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
40 Code of Federal Regulations, Part 423	The provisions of this part of the CFR are applicable to discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.
State LORS	
California Constitution, Article X, Section 2	This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
The California Safe Drinking Water and Toxic Enforcement Act	This Act (California Health & Safety Code Section 25249.5 et seq.) prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The Regional Water Quality Control Board (RWQCB) administers the requirements of the Act.
The Porter-Cologne Water Quality Control Act of 1967, California Water Code Sec 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
California Water Code Section 13260	Requires filing with the appropriate RWQCB a report of waste discharge that could affect the water quality of the state, unless the requirement is waived pursuant to Water Code section 13269.
California Water Code Section 13550	Identifies the use of potable domestic water for industrial uses as a waste or unreasonable use of water if a suitable supply of reclaimed water is available. The availability of reclaimed water is determined provided that the quality and quantity of the reclaimed water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.

California Water Code Section 13552.6	Specifically identifies the use of potable domestic water for cooling towers, if suitable reclaimed water is available, as a waste or unreasonable use of water. The availability of reclaimed water is determined based on criteria listed in Section 13550 by the SWRCB. Those criteria include provisions that the quality and quantity of the reclaimed water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.
California Code of Regulations, Title 17	Title 17, Division 1, Chapter 5, addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines for projects that utilize reclaimed water.
California Code of Regulations, Title 22	Title 22, Division 4, Chapter 15, requires the California Department of Public Health (DPH) to review and approve the wastewater treatment systems to ensure they meet tertiary treatment standards allowing use of recycled water for industrial processes such as steam production and cooling water. DPH also specifies Secondary Drinking Water Standards in terms of Consumer Acceptance Contaminant Levels, including TDS ranging from a recommended level of 500 mg/l, an upper level of 1,000 mg/l and a short term level of 1,500 mg/l.
California Code of Regulations, Title 23	Title 23, Division 3, Chapter 15, requires the RWQCB to issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
Local LORS	
Los Angeles County, Municipal Storm Water NPDES permit	Requires the development of a Standard Urban Stormwater Mitigation Plan (SUSMP).
Los Angeles County Grading Guidelines	Provides regulations and submittal requirements for grading projects.
Los Angeles County Building Code, Title 26	Provides regulations for building permits.
City of Carson General Plan, Water Quality Policies and Programs	These policies are intended to control the potentially significant impacts of development including non-point sources of water pollution, urban runoff, grading, construction, and agricultural activities.
State Policies and Guidance	
SWRCB Res. 2009-0011 (Recycled Water Policy)	This policy supports and promotes the use of recycled water as a means to achieve sustainable local water supplies and reduction of greenhouse gases. This policy encourages the beneficial use of recycled water over disposal of recycled water. This policy states the following recycled water use goals: • Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (AF/y) by 2020 and by at least two million AF/y by 2030; • Increase the use of stormwater over use in 2007 by at least 500,000 AF/y by 2020 and by at least one million AF/y by 2030; • Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020; and • Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

SWRCB Resolutions 75-58 and 88-63	The policy of the SWRCB that addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1976, by Resolution 75-58). This policy states that use of fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Resolution 75-58 defines brackish waters as "all waters with a salinity range of 1,000 to 30,000 mg/l" and fresh inland waters as those "which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife". In a May 23, 2002 letter from the Chairman of the SWRCB to Energy Commission Commissioners, the principal of the policy was confirmed "that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities." Resolution 88-63 defines suitability of sources of drinking water. The total dissolved solids must exceed 3,000 mg/L for it not to be considered suitable, or potentially suitable, for municipal or domestic water supply.
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq)	In the 2003 IEPR, consistent with SWRCB Policy 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating they will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound." Additionally, the Energy Commission will require zero liquid discharge technologies unless such technologies are shown to be "environmentally undesirable" or "economically unsound".
California Water Code Section 461	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas with limited water supply.
National Resources Conservation Service (NRCS), National Engineering Handbook, Sections 2 and 3 (1983)	Sections 2 and 3 of the USDA-NRCS National Engineering Handbook (1983) provide standards for soil conservation and erosion prevention during construction activity.

REGIONAL SETTING

The ~~BP Watson project~~Watson Project is located in the City of Carson, in Los Angeles County. The project is located on the southwest edge of the Los Angeles Basin, which is an alluvial plain bounded by mountains to the north and east and the Pacific Ocean to the south and west. The elevation at the ~~BP Watson~~Watson Project site is approximately 32 feet above mean sea level (MSL). The project is located within the existing BP Carson Refinery and the surrounding areas are highly developed.

Regional Water Resources

The ~~BP Watson~~Watson Project site is situated between the Santa Monica Mountains to the north; Santa Ana Mountains and the San Joaquin Hills to the east; and the Pacific Ocean to the south and west. The Pacific Ocean is approximately 8.5 miles west of the project site, with Long Beach Harbor approximately 5 miles south of the site.

Municipal water in the project vicinity is provided by California Water Services Company. The water supply for the Carson area includes a combination of imported water from the Colorado River and State Water Project (70 to 80 percent) and groundwater pumped from local wells (20 to 30 percent).

State Water Project (SWP) and the Colorado River. Both the SWP and Colorado River have been experiencing historic shortages, and the groundwater basin is already significantly over pumped requiring an extensive water replenishment program to address sea water intrusion and local management through an adjudicated plan.

The SWP has experienced frequent reductions in water allocations to water supply districts due to regulatory restrictions during drought periods. During periods of limited allocations, water users serviced by SWP contractors are required to limit their use of water. South of the Delta, agricultural users have had full allocations only one of the past ten years and have had their allocations cut by 25-60 percent in seven of the past ten years and cut by 90 percent in 2009. In 2011, even with record levels of snowpack, allocations to agricultural users are currently only set at 80 percent, illustrating the new reality of ongoing reduced water supply allocations.

In Resolution 2010-0039, the State Water Resources Control Board recently determined that the Sacramento-San Joaquin Delta is in ecological crisis and that recent Delta flows have been inadequate to support aquatic habitat for endangered native fish species (SWRCB 2010). Returns of salmon on the Sacramento River have declined by 97 percent since 2002, reaching critical levels that required the suspension of commercial and recreational fishing in 2008 and 2009 (PMFC, 2010). The Delta Stewardship Council's Draft Delta Plan concluded that California's total water supply is oversubscribed (DSC, 2011). When water exports from the Delta are reduced, the consequence is increased demand on an already overused and unsustainable groundwater system (DSC, 2011). The Stewardship Council also concluded that the Delta system has already been altered to the extent that some native species may not survive (DSC, 2011).

In addition, as required in the Delta Reform Act (SBX7 1), the SWRCB released new flow criteria for the Delta in Resolution 2010-0039 designed to protect federal and state listed endangered species that depend upon aquatic habitat in the Delta for survival (SWRCB 2010). These criteria indicate that the Delta outflows should be increased to about 75 percent of natural unimpaired flows from November through June to support endangered fish species (SWRCB 2010). By comparison, during drought years in the early 1990s and early 2000s (coinciding with the highest water use at the Watson Cogeneration Project), outflows were reduced to about 30 percent of natural flows (SWRCB 2010). Thus, the SWRCB is recommending that Delta diversions would need to be cut by about 65 percent from the historic levels during drought years to address the significant impacts to the Delta.

The SWRCB indicated that the determinations in Resolution 2010-0039 do not have regulatory or adjudicatory effect (SWRCB 2010). When the SWRCB develops Delta flow objectives with regulatory effect, it must ensure the reasonable protection of beneficial uses, which may entail balancing of competing beneficial uses of water, including municipal and industrial uses, agricultural uses, and other environmental uses (SWRCB

2010). The SWRCB will evaluate the effect of any changes in flow objectives on the environment of the Delta, the upgradient watersheds, and the areas where Delta water is used, as well as, an evaluation of economic impacts (SWRCB 2010). The SWRCB indicated that it may amend the terms and conditions of water right permits and licenses to impose further limitations on the diversion and use of water by water rights holders to protect the Delta or to meet water quality and flow objectives in Water Quality Control Plans it has adopted (SWRCB 2010). The SWRCB also indicated that it may impose restrictions in diversions by the CVP and SWP when the Department of Water Resources and US Bureau of Reclamation seek to change points of diversion for the CVP and SWP as part of a proposed peripheral canal (SWRCB 2010). The report will also be used for development of the 'Delta Plan', also required in the Delta Reform Act, which will identify policies and actions responsible resource agencies must implement for improved water supply reliability and protection of the Delta ecosystem.

As new Delta flow criteria or other regulatory means are adopted in the future to protect the environment within the Delta, SWP allocations are likely to significantly decline to levels at or below the allocation restrictions seen over the past 10 years. As SWP restrictions on water allocations to municipal, industrial and agricultural users become more frequent and significant due to pumping restrictions in the Delta, ~~Staff believes that other existing water users may be impacted by the proposed increase in the use of freshwater for BP Watson operations~~.

In addition the Colorado River has also been experiencing a historic drought. The U.S. Bureau of Reclamation's June 2011 Colorado River Basin Water Supply and Demand Study indicates that water supplies on the Colorado River are anticipated to further decrease by about 9 percent over the next fifty years due to climate change with a projected increase in both drought frequency and duration (USBR, 2011). Droughts lasting 5 years or more are projected to occur 40 percent of the time over the next 50 years (USBR, 2011). Meanwhile consumptive uses derived from the Colorado River have increased by 23 percent between 1971 and 1999 (USBR, 2011).

Climate

The California South Coastal area surrounding the Watson site is characterized as semi-arid with long, dry summers and mild winters. The average annual precipitation, recorded at the Long Beach weather station, is 12.6 inches, with the majority of rainfall occurring between November and April. The average annual temperature is approximately 63 degrees Fahrenheit (Watson, 2009a). The average annual reference evapotranspiration as measured at Long Beach is approximately 46 inches (CIMIS 2009a). The length of the growing season in the South Coast area is 365 days.

Surface Water

The primary drainage system in the area is the Dominguez Channel, which is located approximately 0.4 mile east of the ~~BP Watson~~Watson Project site. The Dominguez Channel originates southeast of Los Angeles International Airport. From its origin, it flows south, past the project site until it joins the East Channel of the Los Angeles Harbor, north of Terminal Island. The drainage basin of Dominguez Channel is approximately 80 square miles and includes the entire project site.

The average annual discharge into the Dominguez Channel from the basin is estimated to be about 16,000 acre-feet. In the vicinity of the project, the channel has a bottom width of 80 feet with a flood depth capacity of approximately 27 feet. The channel banks are lined with rip rap. Additionally, the portion of this channel adjacent to the BP Carson Refinery is classified as an estuary. This portion of the channel exhibits strong marine water quality influence during drier months and fresh water quality during periods of storm runoff (Watson, 2009a). The project site is designated by the City of Carson as a zone "C" flood zone for flood management indicating the potential for flooding is low with shallow flooding possible during runoff events exceeding a 100-year return period (Carson, 2004). Directly adjacent to the site, the Dominguez Channel is designated as a zone AR floodway by the City of Carson indicating that the Dominguez Channel has capacity for the 100-year flood flow.

Groundwater

The ~~BP Watson~~Watson Project site is located in the South Coast Hydrologic Region and the West Coast Subbasin of the Coastal Plain of the LA Basin (West Coast Basin). The West Coast Basin is bounded by the Ballona Escarpment to the north, the Newport-Inglewood fault zone to the east and the Pacific Ocean to the south and west. The total surface area of the West Coast Basin is approximately 91,300 acres. The Los Angeles River and San Gabriel River cross the surface of this subbasin before emptying into San Pedro Bay (DWR, 2003).

The water-bearing deposits include unconsolidated and semi-consolidated marine and alluvial sediments. The Silverado aquifer, which underlies most of the subbasin is the most productive and yields 80-90 percent of annual groundwater extractions. The storage capacity of this aquifer is estimated to be 6.5 million acre-feet. The average specific yield for the subbasin is 13 percent. The West Coast Basin was adjudicated in 1961 (DWR, 2003).

The primary source of groundwater replenishment in the West Coast Basin is underflow across the Newport-Inglewood fault zone from the Central Basin. The regional groundwater flow pattern is southward and westward from the Central Coastal Plain toward the Pacific Ocean. Water levels in the subbasin have risen approximately 30 feet since the basin was adjudicated (DWR, 2003). Groundwater is pumped throughout the basin for municipal and industrial uses by both public and private entities.

The quality of groundwater in the subbasin is variable. The groundwater in the Gaspur zone is sodium bicarbonate in character. The Gardena zone has a calcium-sodium bicarbonate character and is of good quality. The Silverado zone is highly variable, calcium chloride in character near the coast to sodium bicarbonate towards inland areas (DWR, 2003).

Seawater intrusion has degraded the water quality in the Gaspur and Silverado zones. Injection wells are used to limit the landward movement of seawater into the basin. Two seawater barrier projects are currently in operation. The West Coast Basin Project creates a north-south trending mound of freshwater from the LA International Airport to the Palos Verde Hills and the Dominguez Gap Barrier Project (located directly adjacent to BP Refinery) creates a mound of freshwater near Wilmington. In total, over 20,500

acre-feet were injected in 2008-09 and over 23,650 acre-feet were injected in 2009-10 to mitigate sea water intrusion impacts in the basin. Additional replenishment is provided by infiltration from the Los Angeles and San Gabriel Rivers (DWR, 2003).

PROJECT, SITE AND VICINITY DESCRIPTION

The proposed ~~BP Watson project~~Watson Project would be an expansion of the existing 385 megawatt Watson Cogeneration steam and electrical generating facility (Watson Cogeneration) located within the BP Carson Refinery. The ~~BP Watson project~~Watson Project would add one 85 megawatt General Electric combustion gas turbine (CTG) with a heat recovery steam generator (HRSG) to provide additional process steam to the BP Carson Refinery. The proposed CTG and HRSG would be constructed adjacent to the four existing CTG and HRSG systems to operate as a "fifth train" in parallel with the four existing generating trains. The fifth train would complete the original design of the Watson Cogeneration facility. Additional auxiliary equipment would include inlet air filters with foggers, one Boiler Feed Water Pump (BFW), one circulating water pump, two natural gas compressors, and generator step-up transformers and auxiliary transformers. Two new cells would also be added to the existing mechanical draft cooling tower to provide heat rejection for the two existing condensing steam turbine generators (STG). The auxiliary equipment would be located within the existing Watson Cogeneration facility (Watson, 2009a).

The primary objective of the ~~BP Watson project~~Watson Project is to improve the reliability and to provide additional steam and electrical energy supply to the BP Carson Refinery. The project would be a base loaded cogeneration facility with operations planned for 24 hours per day, 7 days per week. A portion of the electricity would be used by the BP Carson Refinery, while excess power produced by the project would be exported to the power grid. Since power generation is a secondary objective to steam generation, the ~~BP Watson project~~Watson Project would operate to maximize steam production by incorporating heavily fired duct burners in the HRSG to maximize steam production for the BP Carson Refinery. However, as currently proposed, the project does not have additional water supply secured beyond operating ~~BP Watson~~the Watson Project under a combined Watson Cogeneration / ~~BP Watson~~Watson Project cap on freshwater use, as conditioned. Any increases in combined use water would be reclaimed water. Although the Watson Project would be able to meet the objectives of reliability and electrical energy, it would not be able to provide additional steam until the reclaimed water supply is available.~~, but BP Watson has not identified a reclaimed water supplier or secured a reclaimed water supply, and so the project may not able to meet its primary objective to provide additional (beyond quantities already supplied by Watson Cogeneration) steam to the BP Carson Refinery.~~

The ~~BP Watson~~Watson Project site is located in the City of Carson in Los Angeles County, approximately 0.7 mile south of the 405 Freeway. The site is roughly bounded by East 223rd Street to the north, Wilmington Avenue to the west, East Sepulveda Boulevard to the south and South Alameda Street to the east. The project site is a discontiguous 2.5 acre brown field site located within the boundary of the existing Watson Cogeneration facility. The project site is currently paved and graveled with minimal slope. The existing Watson Cogeneration facility is approximately 22 acres within the larger 428 acre BP Carson Refinery.

The construction laydown and parking area would be located approximately 1 mile southeast of the project site at 2149 East Sepulveda Boulevard. This 25-acre parcel is paved and currently used as a truck parking and staging area. The project area is zoned as Heavy Industrial and is surrounded by refineries and industrial facilities. No agricultural uses exist within the one-mile radius surrounding the ~~BP Watson~~Watson Project site and laydown area (Watson, 2009a).

The ~~BP Watson project~~Watson Project would rely on existing supply and delivery lines. No offsite improvements such as water and gas supply lines or transmission lines are proposed for the ~~BP Watson project~~Watson Project.

Soils

The soils at the proposed ~~BP Watson~~the Watson Project site are primarily sandy loam and fine sandy loam with loam, silt loam or light clay loam. The soils at the project site are in Hydrologic Soil Group C, well-drained with moderately slow permeability (Watson, 2009a). The soils descriptions are based upon soil mapping units developed by the Natural Resources Conservation Service (NRCS). The ~~BP Watson~~Watson Project site consists of the Zamora and Ramona series soils. The construction laydown and parking area includes the Sorrento and Hanford series soils. The soils within both the ~~BP Watson~~Watson Project site and laydown area are Urban Land soils that have been modified with several feet of additional fill material to accommodate large industrial, housing, or other types of urban development. The construction laydown area is paved and is not expected to require any soil disturbance. The primary soil types located at the proposed project site and laydown area are described below in **Soil & Water Table 2.** Additional soil characteristic data can be found in Table 5.4-1 of the Application for Certification (AFC) (Watson, 2009a).

The project site and construction laydown area are both relatively flat. Some excavation and grading would be required at the relatively flat 2.5 acre project site while no land disturbance is planned for the paved 25 acre construction laydown and parking area. The relatively flat condition and minimal grading required at the ~~BP Watson~~Watson Project site would limit the potential for soil erosion due to water. Approximately 7,000 cubic yards of material will be excavated for foundations. This material would be removed and stockpiled for use as fill material onsite. No imported fill material is anticipated as onsite material is expected to be adequate for construction.

Soil & Water Table 2
Primary Soil Types Potentially Affected & Characteristics

Primary Soil Name	Slope Class	Water Erosion Potential	Wind Erosion Potential	Permeability	Land Capability Class
Hanford sandy loam or fine sandy loam	0 to 15%	Moderate	Moderate	Moderately rapid	3e (non-irrigated)
Ramona sandy loam or fine sandy loam	0 to 5%	Moderate	Moderate	Moderately slow	3e (non-irrigated)

Primary Soil Name	Slope Class	Water Erosion Potential	Wind Erosion Potential	Permeability	Land Capability Class
Sorrento heavy loam	0 to 15%	Moderate	Moderate	Moderate to moderately slow	3e (non-irrigated)
Zamora Fine sandy loam, loam, silt loam, or light clay loam	0 to 9%	Moderate	Moderate	Moderately slow	3e (non-irrigated)

Watson, 2009a, Section 5.4.1.1

There are no major limitations and few overall limitations for the soils at the project site. A geotechnical investigation was performed at the site in 1986 prior to construction of the Watson Cogeneration facility. An additional site-specific geotechnical investigation will be performed prior to construction activities for the ~~BP Watson project~~Watson Project.

Expansive soils are known to exist in the project area and have the potential to impact the suitability of existing soil as a bearing surface for the foundations. It may be necessary to amend these soils to mitigate potential impacts related to the expansive soils. It may also be necessary to import fill material to stabilize these soils prior to construction of the fifth train. Watson has not identified a source or volume of imported fill planned for grading activities at the site at this time. It is anticipated that the planned geotechnical investigation will directly address the presence of expansive soils at the project site and identify any required amendments to the existing soils (Watson, 2009a).

Soil and Groundwater Contamination

The ~~BP Watson project~~Watson Project site was developed with a retention basin for BP Carson Refinery use prior to its current use as a maintenance area for the existing Watson Cogeneration facility. A Phase I Environmental Site Assessment (ESA) was conducted for the ~~BP Watson~~Watson Project site in 2008 and completed in January 2009.

The Phase I ESA found recognized environmental conditions for the ~~BP Watson~~Watson Project site, both onsite and offsite. The current and historical uses of the ~~BP Watson~~Watson Project site within the larger Watson Cogeneration facility and BP Carson Refinery indicate that contaminants of concern include but are not limited to hazardous substances used in petroleum refining and maintenance operations. A limited soil investigation at the site in 1985 found evidence of hydrocarbons in the fill and underlying native soils. The findings of the Phase I ESA recommended a Phase II ESA be performed on the project site.

The Phase II ESA has not been completed and/or presented by Watson at this time. At the Preliminary Staff Assessment Workshop in January 2011, the Regional Water Quality Control Board presented data that indicated that groundwater below the project site is significantly impacted by hydrocarbons including up to 14 feet of non-aqueous liquid phase petroleum hydrocarbons on the groundwater surface above the shallow water table. ~~Prior to the January 2011 Preliminary Staff Assessment Workshop, Watson~~

~~had not acknowledged the extent of existing groundwater impacts at the project site.~~ Energy Commission staff ~~has~~ requested additional data on existing soil and groundwater contamination at the project site and detailed plans for the remediation of the existing contamination including how construction of the fifth train would impact remediation plans.

Watson provided ~~indicates that they will provide~~ soil and groundwater data collected in the vicinity of the Watson site in response to the Los Angeles Regional Water Quality Control Board's June 30, 2011 response to the CEC's request for participation (URS, 2011c and URS 2011d). Watson did indicate that data from a Rapid Optical Screen Test (ROST) borings indicate that the non-aqueous liquid phase hydrocarbon zone may be thinner than 5 feet in depth~~, however, they did not provide any data illustrating the locations and results of the ROST borings~~ (URS, 2011c). In response to staff's May 30, 2011 letter to LARWQCB applicant provided a detailed analysis of the ongoing assessment and remedial activities at the refinery (URS 2011d).

Prior to the Preliminary Staff Assessment, Watson recognized the likelihood of encountering impacted soils during excavation and construction activities. Watson indicated that the investigation of soil and groundwater contamination is part of a separate ongoing investigation/remediation by the BP Refinery Project as part of the Refinery's Cleanup and Abatement Order (CAO). During the project geotechnical assessment activities, soil samples will be collected in areas where ground disturbance is planned within the project footprint (PAL-1). The samples will be analyzed to investigate the potential petroleum hydrocarbon impacts on the subsurface soils. During the project geotechnical assessment and construction activities, any excavated soil will be managed pursuant to applicable BP Refinery soils management plans, and health and safety of site personnel will be managed in accordance with the site specific health and safety plan and applicable BP Refinery procedures. Watson indicates that contaminated soils, if encountered, will be stockpiled onsite and later removed for disposal or treatment and recycling. Watson plans to conduct a pre-assessment to determine if existing soils are subject to additional Federal and State regulations that control excavation of soils impacted by volatile organic compounds (Watson, 2009a). If necessary, engineered fill will be imported to replace excavated materials that are not suitable for reuse. These site conditions, the applicant's proposed actions, and potential impacts, are addressed in the Waste Management section of this analysis.

Stormwater

The Watson site is located in the Dominguez Channel watershed. The Dominguez Channel is located approximately 0.4 miles east of the project site and just east of the construction laydown and parking area. The Dominguez Channel is the primary drainage in the vicinity of the project and is classified as an estuary in the reach adjacent to the BP Carson Refinery. The flows in the Dominguez Channel are primarily comprised of stormwater runoff during winter months and industrial runoff effluents made up mostly of cooling water and treated wastewater (Watson, 2009a). Due to the largely industrial and highly urbanized area draining to the Dominguez Channel, the quality of surface water is impaired and the Dominguez Channel estuary is identified as impaired (Watson, 2009a).

The ~~BP Watson~~Watson Project site is located within the existing Watson Cogeneration facility and is graveled and paved. Stormwater runoff from the existing Watson Cogeneration facility including the Watson site currently drains to a storm drain network that flows easterly toward the Dominguez Channel. The storm drain network is connected to the BP Carson Refinery's existing "clean water system." Runoff collected in this system is discharged directly to the Dominguez Channel under the BP Carson Refinery's NPDES permit. This system includes a valve in the main storm drain line near the discharge point that remains closed during dry weather. Prior to discharge during storm events, the accumulated water is visually inspected for contaminants. If contamination is noted, the water is removed using a vacuum truck and disposed of offsite. Following removal of potentially contaminated water, the valve is opened and stormwater is discharged directly to the Dominguez Channel without additional treatment (Watson, 2009a).

Watson has provided results of water quality sampling and analysis for "clean water system" discharge from the existing Watson Cogeneration facility to the Los Angeles Regional Water Quality Control Board in compliance with the facilities operational NPDES permit. The sample analysis results from 2007 and 2008 indicate that stormwater discharged from the existing Watson Cogeneration facility had elevated levels of metals (chromium, lead, and zinc), polynuclear aromatic hydrocarbons (PAHs), and fecal coliform and e-coli (BP Carson, 2007 and 2008). These analysis results indicate that the current system relying upon "visual inspection" is not adequate to address hydrocarbon, metals, and other potential contamination that may impact stormwater discharged to the Dominguez Channel.

The ~~BP Watson project~~Watson Project would modify the surface drainage of the existing site in the area of the fifth train components. The fifth train would be located within a drivable berm to prevent stormwater run-on from adjacent areas (Watson, 2009a). The area of the fifth train island would be approximately 1.8 acres. Surface runoff from this area would be directed to a number of catch basins distributed around the fifth train island. All collected stormwater runoff would be directed to the existing BP Carson Refinery's oily water treatment system. This system includes treatment processes to remove free oil and suspended solids which are reclaimed and reused within the BP Carson Refinery. The treated wastewater is ultimately discharged to the Los Angeles County Sanitation District's joint treatment facility in Carson under the BP Carson Refinery's Industrial Wastewater Discharge Permit No. 16631 (Watson, 2009a).

The southern-most portion of the fifth train island would be separated from the power block by an earth berm and runoff from this area (0.55 acres) would continue to drain to the existing clean water system. In addition, the remainder of the ~~BP Watson~~Watson Project site, including the auxiliary equipment (cooling tower cells, transformers, boiler feed water pump) and maintenance shop, would also continue to drain to the clean water system and subsequently discharge to the Dominguez Channel (URS, 2010j). Watson has not identified any water quality treatment BMPs to treat stormwater discharged to the Dominguez Channel during operations.

The ~~BP Watson project~~Watson Project would result in a small increase in total stormwater runoff generated at the site by paving areas that are currently covered with gravel. Runoff delivered to the existing Watson Cogeneration facility's clean water

system would decrease while the runoff delivered to the BP Carson Refinery's oily water system would increase as surface runoff that is currently directed to clean water system is routed to the oily water system. Watson has indicated that the existing oily water system has sufficient additional storage and treatment capacity to handle the surface runoff generated by the project (URS, 2010j).

The construction laydown and parking area is currently paved and slopes from the north and south ends towards the center at approximately one percent grade. Catch basins collect stormwater runoff and convey it easterly where it is discharged directly to the Dominguez Channel. The proposed project does not include any modifications to the existing drainage at this area. Runoff from the construction laydown and parking area will continue to flow to the Dominguez Channel during and following construction (URS, 2010j).

Groundwater

The existing Watson Cogeneration facility currently uses groundwater to meet a portion of its water supply needs. An average of 1.4 million gallons per day (mgd) or about 1,534 acre-feet per year of groundwater provides about one third of the raw water supplied to the existing Watson Cogeneration facility (URS, 2011b). This water is combined with municipal water for use at the existing Watson Cogeneration facility (Watson, 2009a). There are nine wells located within the BP Carson Refinery, with three currently in service. Groundwater is supplied to the existing Watson Cogeneration facility from Well 13, located at northern end of the BP Carson Refinery (Watson, 2009a).

The groundwater basin was adjudicated in the by the Los Angeles County Superior Court. The initial legal action regarding declining groundwater levels and sea water intrusion impacts in the basin was filed in 1945. The Los Angeles County Superior Court named the Department of Water Resources as water master for the basin in an interim adjudication in 1955 and a final adjudication in 1961 (DWR, 2010).
The BP Carson Refinery utilizes groundwater within the original water rights assigned to the site. In addition, the BP Carson Refinery leases groundwater rights from surrounding properties. During the rainy season, pumping from onsite wells is curtailed to allow for increased groundwater recharge in the basin, and the existing Watson Cogeneration facility relies on additional municipal supply derived from surface water supplied by the State Water Project and the Colorado River and local groundwater (Watson, 2009a).

The ~~BP Watson project~~Watson Project proposes to continue to utilize the mix of municipal water and groundwater rates to provide water supply for the project. The applicant proposes that use of freshwater for the five train facility would not increase over baseline rates used by the existing four-train Watson Cogeneration Facility (URS, 2011b).

The groundwater table ranges from 10 to 40 feet below MSL across the BP Carson Refinery site. At the ~~BP Watson~~Watson Project site, the water table is approximately -25 to -29 feet MSL, which is approximately 60 feet below the ground surface. The average gradient across the site is approximately 0.003 feet/feet (Watson, 2009a). A

geotechnical report performed for the project site in 1986 indicated that water was not found during subsurface investigations to a depth of 65 feet. It is not anticipated that groundwater will be encountered during construction of the ~~BP Watson project~~Watson Project and dewatering will not likely be required. An additional geotechnical investigation is planned for the project site to support detailed design activities (Watson, 2009a).

Project Water Supply

The ~~BP Watson project~~Watson Project will require water for construction and operational uses.

During construction, water would be required for dust control, moisture conditioning (for compaction), and other uses. This water would be provided by freshwater from the BP Carson Refinery. Watson estimates that about 20,000 gallons per month would be required over a 15-month construction period for dust suppression. Potable water would be provided from the existing Watson Cogeneration facility by a bottled water purveyor (Watson, 2009a).

During operations, the ~~BP Watson project~~Watson Project would utilize freshwater under a combined ~~BP Watson~~Watson Project / Watson Cogeneration cap for fire protection, plant service water, cooling tower cell makeup, and CTG inlet air fogger makeup, and feedwater to the HRSG.

In the original AFC and subsequent data responses, Watson indicated that the proposed ~~BP Watson project~~Watson Project would use, combined with Watson Cogeneration, a total of 7,371 AFY (URS, 2010a) with about 5,806 AFY supplied by reclaimed water and the balance by freshwater from the existing municipal supplies. Following publication of the Preliminary Staff Assessment, Watson submitted a revised Water Resources AFC Section in March 2011. The revised AFC Section indicated that the proposed water supply for the project had changed from reclaimed water to the continued use of the Watson Cogeneration's blend of freshwater supplied by groundwater and municipal water. The existing Watson Cogeneration facility used ~~an average of 4,219 AFY over the previous three years (2008-2010) and~~ an average of 4,609 AFY over the previous 11 years (2000-2010) of operation (URS, 2011b). In the revised AFC Water Resources Section, Watson indicates that the expanded five train facility could operate with the existing baseline water supply and that any additional water that exceeded the freshwater cap for the combined ~~BP Watson~~Watson Project and Watson Cogeneration would be supplied by reclaimed water "if and when" it becomes available (URS, 2011b). Thus, ~~BP Watson~~Watson Project and Watson Cogeneration (including all five trains) would continue to utilize municipal water from the California Water Service Company as provided by the BP Refinery and groundwater provided by the BP Refinery from its ~~from~~ on-site wells as the project's primary water supply at volumes up to the baseline levels for the existing four-train Watson Cogeneration Project, as conditioned.

The BP Carson Refinery is implementing a program, separate from the ~~BP Watson project~~Watson Project, to convert industrial water uses to reclaimed supplies. The applicant asserts that the BP Carson Refinery is pursuing a program to receive additional nitrified and reverse osmosis (RO) reclaimed water from the West Basin

Municipal Water District (WBMWD) for a portion of operational water needs at the existing Watson Cogeneration facility, ~~BP Watson project~~Watson Project, and the BP Carson Refinery. The ~~BP Watson project~~Watson Project proposes to use tertiary treated water (reclaimed water) that is further treated through single pass reverse osmosis or nitrification supplied by the WBMWD to augment and replace (to the extent possible) the use of freshwater for operations at ~~BP Watson~~the Watson Cogeneration Facility (all five trains) (URS, 2011b). ~~However,~~ BP Carson Refinery and WBMWD have been in negotiations since June 2008, and WBMWD indicates they have not ~~been successful in~~yet reach~~ed~~~~ing~~ an agreement with BP Carson Refinery to supply additional reclaimed water supplies to the refinery and Watson in over three years of negotiations (CEC, 2011e).

Since the primary purpose of the ~~BP Watson project~~Watson Project is to provide steam to the BP Carson Refinery, total water supply for the ~~BP Watson project~~Watson Project would be significantly greater than for a combined cycle generating facility of a similar capacity that primarily generates electricity. The average annual water demand for the ~~BP Watson~~Watson Project fifth train would be approximately 2,724 acre-feet (URS, 2011b). This total demand includes approximately 2,286 AFY of treated process water (1,279 AFY of treated freshwater and 1,007 AFY of condensate return) and 439 AFY of cooling tower makeup (URS, 2011c). The ~~BP Watson~~Watson Project fifth train would have an average daily consumption of 2.43 million gallons and a maximum daily consumption of 2.66 million gallons of freshwater (URS, 2011b). The ~~BP Watson project~~Watson Project would supply approximately 1.88 mgd or 2,111 AFY of process steam and 0.07 mgd or 79 AFY of high pressure water to the BP Carson Refinery (Watson, 2011b). The water use efficiency for ~~BP Watson project~~Watson Project generation, i.e. total water supply less the steam and water supplied to the BP Carson Refinery, is about 534 AFY or about 6.3 AFY/MW, which is typical for wet cooled combined cycle power plants in California.

The ~~BP Watson project~~Watson Project would also utilize about 30 gpm or about 48 AFY for evaporative cooling of inlet air for the combustion turbine generators to increase power output. The proposed two additional mechanical draft cooling tower cells would use approximately 272 gpm or 439 AFY of freshwater. There will be approximately 3.4 cycles of concentration of the combined cooling tower makeup (Watson, 2009a).

Water usage rates are summarized below in **Soil & Water Table 3.**

Watson indicates that the Watson Cogeneration facility currently receives approximately 45 percent of water supplied as steam to its HRSG as returned condensate from its STGs and the BP Carson Refinery. This condensate displaces the use of treated water by the cogeneration facility. The ~~BP Watson project~~Watson Project would also utilize this condensate supply to reduce project water consumption (URS, 2010a). Watson indicates that about 1,007 AFY of condensate return would be utilized for process water (URS, 2011c).

Soil & Water Table 3
~~BP Watson~~Watson Project Fifth Train Water Usage Rates

Water Use	Average Daily (mgd)	Maximum Daily (mgd)	Average Annual (acre-feet)
Treated Makeup Water	1.14	1.17	1,279
Condensate Return	0.90	0.90	1,007
Total Treated Process Water	2.07	2.04	2,286
Nitrified Reclaimed Water	0.39	0.59	439
Total Water Use	**2.43**	**2.66**	**2,724**
Process Steam to BP Carson Refinery	1.88	1.88	2,111
High Pressure Water to BP Carson Refinery	0.07	0.07	79
Evaporation – Cooling Tower Cells	0.28	0.41	310
Evaporation – CTG Inlet Air Coolers	0.07	0.4	48
Net Water Use for Generation (Supply less Steam & Water to Refinery)	0.48	0.71	534

BPW, 2009a Table 5.5-4,
[1] Evaporation from Cooling Towers includes both steam and drift (water droplets) discharged from cooling towers

The water supply for the ~~BP Watson project~~Watson Project will be provided using the BP Carson Refinery's existing supply lines for groundwater (pumped from onsite wells), blended water (onsite groundwater blended with municipal water) and municipal water. Raw freshwater would be treated by Watson's dedicated water treatment system prior to use as process water. Energy Commission staff requested information regarding Watson's dedicated water treatment facility including the efficiency of the treatment processes and costs for operations and maintenance. However, the Applicant objected to providing information regarding the onsite water treatment processes that would be utilized for the proposed project because the onsite treatment for the existing Watson Cogeneration and for the proposed ~~BP Watson project~~Watson Project was "not relevant to the proposed project and unduly burdensome" (URS, 2011c). Lacking the details of the onsite water treatment processes proposed for use to treat water for the proposed fifth train, staff will analyze raw water amounts and use rates.

When delivery of RO water and nitrified water from WBMWD is increased to supply the ~~BP Watson project~~Watson Project at levels above a combined 5 train cap, the additional reclaimed water would be routed to the BP Carson Refinery in existing recycled water supply lines from the Carson Regional Water Recycling Facility. The RO water would augment, and to the extent possible, replace freshwater as the primary source of process water for the project. The RO water would require additional treatment by second pass RO prior to use for steam generator (HRSG) makeup and CTG inlet fogger supplies. This water may also require conditioning prior to its use. Cooling tower makeup water would be provided by second pass RO treatment reject water augmented by nitrified reclaimed water. Cooling tower water would be chemically conditioned with sulfuric acid to reduce alkalinity and to control scaling, polymeric dispersant to further inhibit scale, and sodium hypochlorite to prevent bio-fouling.

Potable water would be provided from the connection at the existing Watson Cogeneration facility. The potable water is supplied by California Water Services Company. Potable water will be utilized for eye wash stations, safety showers, and domestic uses. Watson did not provide an estimate of the anticipated potable water use by the ~~BP Watson project~~Watson Project. However, it is not expected that potable supply would be considerably higher than potable use at the existing Watson Cogeneration facility.

Process and Sanitary Wastewater

Wastewater streams from the existing Watson Cogeneration facility including process wastewater, cooling tower blowdown, boiler blowdown, boiler feedwater reject, and stormwater runoff from contact areas are routed to the BP Carson Refinery's oily-water treatment system. The oily-water treatment system removes free oil and suspended solids, which are recovered and reused at the BP Carson Refinery. Treated wastewater is delivered to a storage tank at the BP Carson Refinery before being discharged to the LA County Sanitation District's joint treatment facility in Carson. Solids remaining from the hydrocarbon recovery process are disposed of offsite as a hazardous waste at a Resource Conservation and Recovery Act (RCRA) approved incineration facility (Watson, 2009a).

The ~~BP Watson project~~Watson Project would also discharge wastewater to the BP Carson Refinery oily-water treatment system. The primary source of wastewater would be cooling tower blowdown water which will consist of nitrified reclaimed water and RO reject water concentrated through evaporative losses in the cooling towers. The wastewater would also include residual chemicals used to control scaling and bio-fouling of the cooling towers (Watson, 2009a).

Process wastewater from the boiler feedwater treatment system would also be discharged to the BP Carson Refinery oily-water treatment system. The boiler feedwater system would use a lime/zeolite softening process that generates a lime slurry that would be routed to holding tanks to allow solids to settle out of suspension. The remaining liquids would be returned to the process wastewater stream. A brine solution utilized to regenerate the zeolite softener would be discharged to the process wastewater stream.

As discussed above, stormwater from the power block area would also be discharged to the BP Carson Refinery oily-water treatment system. In addition, wastewater and stormwater from equipment drains that may contain oil would be discharged to the oily-water treatment system.

The industrial wastewater generated by the ~~BP Watson project~~Watson Project would be approximately 80 gpm on average and 138 gpm as a maximum. The daily volume of industrial wastewater would be approximately 134,000 gallons on average with a maximum of approximately 199,000 gallons (Watson, 2009a).

The stormwater runoff from the ~~BP Watson project~~Watson Project discharged to the BP Carson Refinery's oily-water system would be highly variable depending on rainfall. The estimated 100-year, 24 hour peak discharge from the fifth train is approximately 9.1 cfs or 4,090 gpm. The total volume generated by the 100-year event is estimated to be

42,983 cubic feet or 320,839 gallons. The maximum discharge condition would occur with the maximum daily wastewater production coupled with the 100-year storm. The peak discharge to the oily water treatment system would be approximately 4,229 gpm. The storage capacity of the existing tanks, basins, and reservoirs associated with BP Carson Refinery's oily water treatment system is approximately 115 million gallons or about 15.4 million cubic feet (URS, 2010a).

The wastewater discharge limits are set forth in the industrial waste discharge permit for the BP Carson Refinery. The BP Carson Refinery has provided a letter to Watson acknowledging that the oily water treatment system has sufficient capacity to accept the waste stream from the fifth train while meeting its permitted discharge requirements (Watson, 2009a).

The existing sanitary system for the Watson Cogeneration facility discharges to a sanitary sewer that delivers wastewater to the LA County Sanitation District. This connection is designed for the sanitary flow from the administration and control building and will not change as part of the ~~BP Watson project~~Watson Project (Watson, 2009a). The sanitary waste drains for the project will connect to the existing system at the Watson Cogeneration facility.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section provides an evaluation of the expected direct, indirect and cumulative impacts to soil and water resources caused by construction, operation and maintenance of the project. Energy Commission staff's analysis of potential impacts consists of a brief description of the potential effect, an analysis of the relevant facts, and application of the threshold criteria for significance to the facts. If mitigation is warranted, Energy Commission staff provides a summary of Watson's proposed mitigation and a discussion of the adequacy of the proposed mitigation. If necessary, Energy Commission staff presents additional or alternative mitigation measures and refers to specific conditions of certification related to a potential impact and the required mitigation measures. Mitigation is designed to reduce potentially significant project impacts to a level that is less than significant.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The proposed ~~BP Watson project~~Watson Project was evaluated to determine whether its construction or operation would result in erosion of soils, the discharge of sediments into surface waters or the contamination of either groundwater or surface water. Staff also evaluated the potential of the project's proposed freshwater use to cause a significant depletion or degradation of local and regional water resources.

There are extensive regulatory programs in effect designed to prevent or minimize these types of impacts. Compliance with these programs, absent unusual circumstances, will ensure that significant impacts do not occur. The regulatory procedures typically offer a suite of options for addressing the potential impacts and include performance standards so that impact avoidance or minimization is ensured.

To evaluate potential significant impacts to soil or water resources, staff assessed:

- If construction or operation would lead to accelerated wind or water erosion and sedimentation.
- If the project would exacerbate flood conditions in the vicinity of the project.
- If the project's proposed freshwater supply including locally pumped groundwater would cause a substantial, or potentially substantial, adverse impact to the quantity or quality of local groundwater including due to sea water intrusion.
- If the project's proposed freshwater supply including imported surface water would cause a potentially significant adverse impact to regional water supplies derived from the State Water Project and the Colorado River.
- If project construction or operation would lead to degradation of surface or groundwater quality.
- If the project would comply with all applicable LORS.

These criteria are based on the California Environmental Quality Act (CEQA) Guidelines and performance standards. The threshold of significance for project impacts is based on the ability of the project to be built and operated without violating applicable erosion, sedimentation, flood, surface or groundwater quality, water supply, or wastewater discharge standards.

The federal, state, and local LORS and policies presented in **Soil & Water Table 1** represent the applicable standards used for the OGS analysis. These LORS support a comprehensive regulatory system, with adopted standards and established practices designed to prevent or minimize adverse impacts to soil and water resources. For those project impacts that exceed standards or result in a significant adverse impact, conditions of certification may be necessary to ensure compliance with standards or require mitigation measures to reduce the impacts to a less than significant level.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The direct and indirect impact and mitigation discussion presented below is divided into a discussion of impacts related to construction and operation. For each potential impact evaluation, Energy Commission staff briefly describes the potential effect and applies the threshold criteria for significance to its analysis. If mitigation is warranted, Energy Commission staff provides a summary of Watson's proposed mitigation and a discussion of the adequacy of the proposed mitigation. In the absence of an Applicant-proposed mitigation or if mitigation proposed by Watson is inadequate, Energy Commission staff mitigation measures are recommended. Energy Commission staff also provides specific conditions of certification related to a potential impact and the required mitigation measures.

Construction Impacts and Mitigation

Construction of the ~~BP Watson project~~Watson Project will include asphalt removal, demolition of existing structures, soil excavation, soil stockpiling, grading, and connection to existing utility lines. Water will be used primarily for dust suppression and moisture conditioning during construction. Potential impacts to soils related to increased

erosion or the release or migration of hazardous materials are possible during construction activities. Potential stormwater impacts could result if increases in the runoff flow rate and volume discharged from the site were to increase flooding downstream. Water quality could be impacted by the discharge of eroded sediments from the site or hazardous materials released during construction. Project water demand could affect quantity of water resources. Potential construction related impacts to soil, stormwater, water quality and quantity, including Watson's and Energy Commission staff's proposed mitigation measures are discussed below.

Soil Erosion Potential

Construction activities can lead to adverse impacts to soil resources including increased soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation. Activities that expose and disturb the ground surface leave soil particles vulnerable to detachment by wind and water. Soil erosion could result in increased sediment loading to nearby receiving waters including the Dominguez Channel.

The magnitude, extent and duration of those impacts would depend on several factors, including the proximity of the ~~BP Watson~~Watson Project site to surface water, the type of soils affected, and the method, duration, and time of year of construction activities. Prolonged periods of precipitation, or high intensity and short duration runoff events coupled with earth disturbance activities can result in on-site erosion. In addition, high winds during grading and excavation activities can result in wind borne erosion leading to increased particulate emissions that adversely impact air quality. The implementation of appropriate erosion control measures will help conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality.

Construction of the ~~BP Watson project~~Watson Project would permanently disturb approximately 2.5 acres within the existing Watson Cogeneration facility. The construction laydown and parking area is currently paved and will not require additional land disturbance during construction. ~~BP Watson~~the Watson Project does not include the construction of any off-site linear utilities.

The project site is flat and approximately level with the adjacent existing facilities. During construction activities the existing paving and gravel at the project site would be removed to prepare for the installation of the foundations and other underground facilities. This area would have an increased potential for erosion while the soil is exposed.

In the absence of proper BMPs and due to the soil types, the project earthwork could cause significant fugitive dust and erosion. In reference to **Soil & Water Table 2**, the predominant surface soil classifications on the ~~BP Watson~~Watson Project site are coarse to medium in texture and range from sandy loam to light silty clay loam. The soil types have low water erosion potential and moderate wind erosion potential (Watson, 2009a).

Water and Wind Erosion

The ~~BP Watson project~~Watson Project site will be subject to wind and water erosion during construction. Project construction is planned over a period of about 24-months (URS, 2010a). Watson anticipates that dust suppression measures will be required during 15 months of the construction period.

Earthwork activities at the site would include removal of existing asphalt and gravel surface material, topsoil, vegetation, and debris; excavation and compaction of earth for the site grades; foundation excavation, and trenching for underground systems. The total volume of soil excavation at the site would be approximately 7,000 cubic yards. This material would be stockpiled on site to be used for fill. Material that is unsuitable for fill due to hazardous material impacts will be disposed of off-site. The potential soil disposal location has not been identified at this time.

The project site is expected to include the presence of expansive soils. Watson indicates that these soils will either be amended (by import of additional soils) to be suitable for construction or be removed and replaced with suitable material. The extent of the expansive soils is unknown at this time. An additional site-specific geotechnical investigation will be performed prior to construction activities for the ~~BP Watson project~~Watson Project to help identify areas of expansive soils (Watson, 2009a). Watson estimates that up to 7,000 cubic yards of engineered fill may need to be imported to the site (URS, 2010a).

Watson prepared a preliminary draft Drainage Erosion and Sediment Control Plan (DESCP) that provides conceptual plans for erosion and drainage control measures, including BMPs to be implemented during the construction phase of the ~~BP Watson project~~Watson Project. Watson has proposed the following erosion control measures: scheduling to minimize disturbed areas exposed during the rainy season; application of water or dust palliatives to provide dust control at disturbed areas, haul roads, and parking areas; stockpile management including covering; and perimeter sediment barriers. Watson has also proposed the following sediment treatment control measures to trap eroded sediments: use of silt fences; straw bale barriers; storm drain inlet protection; stabilized construction and site entrance/exits; and street sweeping and vacuuming (URS, 2010a). During construction, stormwater runoff from the fifth train power block area would be directed to the BP Carson Refinery's oily water treatment system. Runoff from the southern portion of the fifth train and the remainder of the existing Watson Cogeneration facility, including areas redeveloped as part of ~~BP Watson~~the Watson Project, would continue to drain to the existing storm drain system and subsequently the Dominguez Channel. The construction laydown area would be separated from the parking area using Jersey barriers (or K-rails) and sand bags. Storm drain inlet protection measures would be used at the existing inlets in the laydown area to prevent sediments from being discharged directly to the Dominguez Channel.

Watson believes that the relatively flat site, the existing stormwater collection system, and the use of construction BMPs will reduce the potential for soil loss and erosion to a negligible level. Watson has indicated that large scale measures such as sediment traps, retention basins and drainage diversions would not be necessary at the project site.

Energy Commission staff agrees that proper application of erosion control and sediment control BMPs can reduce the impact to soil resources from wind and water erosion to a level that is less than significant. During active excavation and along construction roads, watering would need to be applied several times per hour to limit significant wind erosion and fugitive dust emissions, especially during periods of high winds. Routing stormwater runoff from the power block area to the BP Carson Refinery's oily-water treatment system would help limit discharge of eroded sediment to adjacent waterways. The final DESCP should identify the quantities of soil that may be imported or exported from the site, and provide specific BMPs to limit impacts related to wind and water erosion during loading and transport activities. Proper implementation and maintenance of the BMPs outlined in an approved DESCP would limit erosion and migration of soils from the ~~BP Watson~~Watson Project site and into downstream waterways including the Dominguez Channel.

Energy Commission staff believes the proposed plans are reasonable at this level of project planning to avoid significant adverse impacts due to wind and water erosion. Condition of Certification **SOIL&WATER-1** would require Watson to prepare a final DESCP for both construction and operations, to assure these BMPs are implemented, and to identify post-construction BMPs to stabilize the project site. Similar to the DESCP and in accordance with federal law, the RWQCB specifies that Watson is to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) for construction activity which is required under Condition of Certification **SOIL&WATER-2**.

Soil and Groundwater Contamination

The Phase I ESA found that current and historic uses of the existing Watson Cogeneration facility and surrounding area within the BP Carson Refinery indicate that soil and groundwater at the ~~BP Watson~~Watson Project site could potentially be impacted by hazardous substances used in petroleum and maintenance operations. A limited soil investigation at the site in 1985 found evidence of hydrocarbons in the fill and underlying native soils. The Los Angeles Regional Water Quality Control Board (LARWQCB) has indicated that groundwater below the project site is significantly impacted by hydrocarbons including up to 14 feet of non-aqueous liquid phase petroleum hydrocarbons on the groundwater surface above the shallow water table. The data presented by the LARRWQCB indicate that there may be a hydrocarbon source area at or in the near vicinity of the fifth train project site.

Watson indicates that during the project geotechnical assessment activities, soil samples will be collected in areas where ground disturbance is planned within the project footprint, and analyzed to investigate the subsurface soils for petroleum hydrocarbon impacts. During the project geotechnical assessment and during construction activities, any excavated soil would be managed pursuant to applicable Refinery soils management plans, and health and safety of site personnel will be managed in accordance with the site specific health and safety plan and applicable refinery procedures. Watson has indicated that any contaminated materials encountered during construction would be temporarily stockpiled onsite and disposed of offsite in accordance with all applicable LORS. Prior to excavation at the site, a pre-assessment would be conducted to determine if any excavation will need to follow regulations (40 CFR 63 Subpart GGGGG and Air Quality Management District Rule

116) for air emission from excavated soil contaminated with volatile organic compounds (Watson, 2009a). Workers would be instructed on proper BMP management as well as common sense practices to minimize the risk of exposure to soil contaminants. This includes instruction to recognize evidence of contaminated soil and avoiding handling of potentially contaminated material without proper training (Watson, 2009a).

Watson ~~indicates~~ provided~~that they will submit~~ information on hydrocarbon impacts to soils and groundwater in the vicinity of the Watson site in response to the LARWQCB's June 30, 2011 response to the CEC's request for LARWQCB participation (URS, 2011c and URS 2011d). Watson did indicate that the BP Refinery has been monitoring groundwater via a network of more than 300 monitoring wells (URS, 2011c). In response to staff's May 30, 2011 letter to LARWQCB applicant provided a detailed analysis of the ongoing assessment and remedial activities at the refinery (URS 2011d). ~~However, thus far Watson has not submitted any groundwater monitoring data either related to groundwater depths or analyses in response to multiple Energy Commission staff requests.~~

There has been no specific detail provided on how and if hydrocarbon impacted soil and groundwater below the project site would be remediated. Watson did indicate that there are 22 recovery wells throughout the BP Carson Refinery used to remove hydrocarbon freeproduct and contaminated groundwater (URS, 2011c). Watson indicates that some of the recovery system is focused on the area directly downgradient of the project site. This limited information supports Energy Commission staff's concern that there could be a significant hydrocarbon source area at the proposed fifth train site.

It is not clear if additional excavation beyond the minimum required for project construction will be required to remove hydrocarbon impacted soils. Energy Commission staff has requested that Watson provide detailed information on the extent of soil and groundwater contamination at the site and Watson's plans to remediate the existing soil and groundwater contamination (CEC, 2011b).

Of particular concern is that construction of the fifth train could limit options for remediation of soil and groundwater impacted by hydrocarbons including the capture of floating hydrocarbons on the groundwater surface. If existing levels of hydrocarbon impacts are significant, soils and groundwater may need to be remediated to acceptable levels as needed to manage human health risks, ecological risks, and to prevent the existing hydrocarbons from migrating off site and causing significant adverse impacts to neighboring properties.

A Phase II ESA (potentially performed with the project geotechnical assessments) would provide more detailed information regarding the extent and location of any existing soil and/or groundwater contamination. Following completion of the soils and groundwater investigation or Phase II ESA, Watson would need to prepare a site-specific Soil Management Plan (SMP) which would address soil and groundwater contamination and the level of associated risks to workers and nearby environments. The SMP should include an ecological risk screening to help guide decisions on the levels of soil contamination that require removal or remediation to protect the environment including the Dominguez Channel adjacent to the site and San Pedro Bay. The SMP would provide instructions for soil handling, stockpiling, and dust and erosion

control during construction including BMPs to specifically address impacted soils. Please refer to the **Waste Management** section for more detailed analysis of the existing hydrocarbon impacts and requirements for remediation to mitigate potentially significant adverse impacts.

The implementation and routine maintenance of erosion control measures as required by the DESCP, SWPPP, and SMP would limit the potential for existing contaminants to migrate offsite through wind and water borne erosion. See the **Waste Management** Section for further discussion of potential soil and groundwater contamination and conditions of certification proposed for mitigation of any potential impacts due to existing soil and groundwater contamination.

During construction, there is also the potential for hazardous chemicals to be released from construction equipment or materials storage areas which could cause potentially significant soil or groundwater contamination impacts. Watson identified a number of BMPs related to construction equipment in the draft DESCP including: use of a temporary fueling area for construction equipment and use of drip pans or absorbent pads in maintenance areas. Watson indicated that hazardous liquids would be stored in a separate enclosed building within one or more containment facilities. The diesel storage tank will be double walled with the capacity to store 100 percent of the tank volume to prevent a release in the event of a leak (URS, 2010a).

Energy Commission staff believes that these measures will be effective in preventing migration of existing soil and groundwater contamination and to limit the potential for a release of hazardous materials to cause adverse impacts to soil and groundwater during construction of the proposed ~~BP Watson project~~Watson Project. Condition of Certification **SOIL&WATER-2** requires Watson to prepare and implement a SWPPP for construction activity as specified by the RWQCB. The Construction SWPPP would provide details on BMPs for soil stockpile management, construction equipment maintenance and fueling, and hazardous materials storage.

Stormwater

Construction of the ~~BP Watson project~~Watson Project could lead to flooding or water quality impacts related to stormwater runoff during the construction period. Flooding in the vicinity of the project site could also increase if peak runoff flow rates discharged from the ~~BP Watson project~~Watson Project increase. Water quality could also be adversely impacted if the stormwater drainage pattern concentrates runoff in areas that are not properly protected with BMPs causing erosion of soils and discharge of sediment into down-gradient surface waters. Potentially significant water quality impacts could occur during construction, excavation, and grading activities if contaminated soil or other hazardous materials used during construction were to contact stormwater runoff and drain off-site.

The ~~BP Watson~~Watson Project site is located in a highly developed industrial and commercial area within the City of Carson. The project site is located within the existing Watson Cogeneration facility and is covered pavement and gravel. Currently, stormwater runoff from the existing Watson Cogeneration facility including the ~~BP Watson~~Watson Project site flows to the existing onsite storm drain system which discharges to Dominguez Channel east of the existing Watson Cogeneration facility.

The construction of the ~~BP Watson project~~Watson Project will change the drainage patterns at the existing site. The fifth train power block is approximately 1.8 acres and would be isolated from the remainder of the existing site by the construction of a drivable earthen berm (URS, 2010a). The ~~BP Watson project~~Watson Project would utilize both the existing storm water drainage system and existing oily water treatment system during construction. During the initial phases of construction, stormwater would be routed away from the fifth train and the proposed storm drain system would be installed. Stormwater runoff from the fifth train power block area would be captured in a number of catch basins and subsequently routed to the BP Carson Refinery's oily water treatment system. Runoff from the remainder of the power block area, as well as the maintenance shop and transformer areas included in the ~~BP Watson project~~Watson Project, approximately 0.7 acres, would continue to discharge to the existing storm drain system during and following construction.

Watson has indicated that there is sufficient capacity in the BP Carson Refinery's existing oily water treatment system to accept the stormwater runoff generated from the ~~BP Watson project~~Watson Project. It is estimated that 10-year and 100-year peak runoff from the ~~BP Watson~~Watson Project site would increase by approximately 2.5 percent as compared to existing conditions. The peak discharge to the oily water treatment system is estimated to be 5.92 cfs and 9.11 cfs for the 10-year and 100-year events, respectively. The estimated volume of runoff to the oily water system would be approximately 27,500 cubic feet and 42,900 cubic feet for the 10-year and 100-year events, respectively. Runoff discharged to the Dominguez Channel would be reduced because runoff from the fifth train power block area would be discharged to the oily water system rather than the storm drain system. This would prevent flooding related impacts downstream of the ~~BP Watson~~Watson Project site due to an increase in stormwater runoff.

The construction laydown area will not require any land disturbance and the drainage pattern will not be modified from existing during or following construction. Runoff currently flows to catch basins in the parking lot area which are connected to a storm drain system that discharges to the Dominguez Channel. Stormwater runoff from the laydown area would not increase or cause any flood related impacts along the Dominguez Channel.

Watson prepared a preliminary draft DESCP in response to Energy Commission staff's comments, providing conceptual plans for stormwater management measures during the construction and operation phases of the ~~BP Watson project~~Watson Project. Sediment trapping BMPs including: silt fences; straw bale barriers; storm drain inlet protection; stabilized construction and site entrance/exits; and street sweeping and vacuuming would limit discharge of eroded sediment into stormwater runoff (URS, 2010a). Stock pile management BMPs would limit erosion of sediments potentially impacted by hazardous materials into stormwater runoff. Implementation of vehicle fueling and maintenance BMPs and hazardous materials storage BMPs will limit the potential for hazardous materials used during construction to be released into stormwater at the site. Routing of stormwater runoff from the fifth train power block area to the BP Carson Refinery's oily water treatment system will also limit the potential for sediments and hazardous materials to be discharged in stormwater leaving the ~~BP Watson project~~Watson Project during construction. The final DESCP will need to

identify specific locations for proposed BMPs and provide calculations to demonstrate that numerically sized BMPs meet CASQA and Los Angeles County standards.

Energy Commission staff has reviewed Watson's stormwater management plans and believes that Watson has identified a reasonable conceptual level BMP plan that will avoid significant adverse impacts related stormwater drainage and water quality during construction. Condition of Certification **SOIL&WATER-1** would require Watson to prepare a Final DESCP for both construction and operations. The Regional Water Quality Control Board (RWQCB), in implementing federal law, requires that Watson prepare and implement a SWPPP for construction activity; this is reflected in Condition of Certification **SOIL&WATER-2**. Additionally, Condition of Certification **SOIL&WATER-3** requires Watson to prepare and submit for approval a Standard Urban Stormwater Mitigation Plan (SUSMP) as required under Los Angeles County's MS4 NPDES Permit. The SUSMP will identify pollutants of concern and identify the means to minimize the discharge of these pollutants from the project site including the use of numerical design standards for water quality treatment BMPs.

Energy Commission staff believes that through the proper sequencing construction activities and the application of BMPs, impacts to soil and water resources from stormwater drainage during construction will be reduced to a less than significant level.

Construction Water Supply

Watson has indicated that water will be required for dust suppression and miscellaneous activities during construction. It is estimated that the total water use would be 20,000 gallons per month during the 15-month construction period for a total of 300,000 gallons (Watson, 2009a). The existing reclaimed water system at the BP Carson Refinery will be used to provide construction water. Potable water for the construction workforce will be provided from the existing Watson Cogeneration facility from a bottled water purveyor.

Energy Commission staff believes that construction water supply may be underestimated for periods of significant grading activities. 20,000 gallons per month equates to about 115 gallons per hour which may not be sufficient to control dust at the site and provide moisture for soil compaction during major grading operations. Watson should be prepared to deliver additional water as necessary for dust control and other construction needs. Energy commission staff believes that up to 2,000 gallons per hour may be required to control dust emissions during active grading with moderate to high winds. Energy Commission staff believes that there is adequate water supply available at the existing Watson Cogeneration facility to suppress dust during construction, and do not expect significant wind erosion impacts due to limited construction water supplies. Energy Commission staff believes that the use of reclaimed water from the existing on-site facilities for dust suppression and miscellaneous construction activities will have a less than significant impact on the existing water supply resources.

Groundwater – Dewatering

A geotechnical report performed for the project site in 1986 indicated that water was not found during subsurface investigations to a depth of 65 feet. It is not anticipated that groundwater would be encountered during construction of the ~~BP Watson~~

~~project~~Watson Project facilities and dewatering would not be required during construction. An additional geotechnical investigation is planned for the project site to support detailed design activities (Watson, 2009a). Information gathered during the planned geotechnical investigation would be utilized to further address the potential for groundwater to be encountered during construction activities.

The final DESCP and SWPPP would need to address potential dewatering during construction of ~~BP Watson~~the Watson Project, including any information obtained during the Phase II site investigation regarding groundwater contamination and required treatment. Watson would need to address any potential groundwater dewatering in the final DESCP and SWPPP above documents in order to meet the Conditions of Certification **SOIL&WATER-1** and **-2.**

Wastewater

Construction wastewater generated onsite would include equipment washdown water, water from pressure testing the service utilities, and concrete washout wastewater. Watson has not provided an estimate of the volume of wastewater generated onsite resulting from construction activities. Equipment washdown water and utility pressure testing water would be discharged to BP Carson Refinery's oily water treatment system. Concrete washout water and slurries would be discharged to an onsite facility for drying. The facility would provide sufficient capacity to contain all concrete washout wastes and wastes collected from any saw cutting operations (URS, 2010a).

Sanitary facilities would consist of portable chemical toilets and a holding tank at the construction office building. It is estimated that during construction, the project would generate approximately 450 gallons of sanitary waste per week (Watson, 2009a).

Improper handling or containment of construction wastewater could cause a broader dispersion of contaminants to soil, groundwater or surface water. The final DESCP and SWPPP should address the total estimated wastewater to be generated during construction, both for discharge to the existing oily water system and for the concrete washout containment. During construction, wastewater (including any groundwater generated by dewatering activities) would be managed with BMPs identified and implemented in accordance with the DESCP consistent with Condition of Certification **SOIL&WATER-1** and the construction SWPPP required by the RWQCB, consistent with Condition of Certification **SOIL&WATER-2**. Energy Commission staff concludes that no significant impacts from construction wastewater will occur provided that all construction wastewater is handled in accordance with BMPs described in the project's construction SWPPP and DESCP.

Operation Impacts and Mitigation

Operation of ~~BP Watson~~the Watson Project could lead to potential significant impacts to soil, stormwater runoff, water quality, and water supply. Soils may be potentially significantly impacted through erosion or the release of hazardous materials used in the operation of ~~BP Watson~~the Watson Project. Stormwater runoff from ~~BP Watson~~the Watson Project could result in potential significant impacts if increased runoff discharged from the site leads to increases in downstream flooding. Water quality could be significantly impacted by discharge of eroded sediments or hazardous materials

released during operation. Water supply for plant processes, fire protection, and potable uses could lead to potential significant impacts to quantity or quality of regional water resources. Of particular concern is the potential for the project's use of groundwater to cause significant sea water intrusion impacts to the aquifer. Wastewater discharge could cause impacts to downstream receiving waters if the quantity or quality of wastewater discharged exceeded the limitations of the wastewater treatment system. Potential significant impacts to soil, stormwater, water quality, flooding, water supply, and wastewater related to the operation of ~~BP Watson~~the Watson Project including Watson's proposed mitigation measures and Energy Commission staff's proposed mitigation measures, are discussed below.

Soil

During operation of the ~~BP Watson project~~Watson Project, the site would be covered with impervious surfaces and gravel leaving no soil exposed. Hazardous materials used in operations of the ~~BP Watson project~~Watson Project will be stored at the existing Watson Cogeneration facility in storage areas equipped with curbs or containment dikes to contain spills or leaks. As a result, impacts to soils related to erosion or hazardous materials handling during operations will not be significant.

Condition of Certification **SOIL&WATER-1** requires the implementation and maintenance of drainage and erosion control measures during operations according to plans as specified in the DESCP. Condition of Certification **SOIL&WATER-4** requires the preparation and implementation of an Industrial SWPPP as specified by the RWQCB. The Industrial SWPPP would include BMPs to protect stormwater from impacts related to soil erosion and hazardous materials release. With implementation and maintenance of the BMPs detailed in the required plans, Energy Commission staff believes there would be no significant impacts to soil resources during operation of the ~~BP Watson project~~Watson Project.

Stormwater

Energy Commission staff examined several potential significant impacts to stormwater. The proposed stormwater management plans were examined to determine if the ~~BP Watson project~~Watson Project could cause significant flooding or water quality impacts for stormwater discharged from the site. Significant flooding impacts could occur along the Dominguez Channel downstream of the site if runoff peak flow rates or volumes discharged from the ~~BP Watson project~~Watson Project increased as compared to existing conditions. Water quality impacts could occur if hazardous materials or eroded sediments were released in runoff discharged from the site.

During operations, the ~~BP Watson~~Watson Project site will be paved with asphalt, concrete, and gravel. Stormwater runoff from the 1.8 acre fifth train power block would be routed to the BP Carson Refinery's oily water treatment system and ultimately discharged to Los Angeles County Sanitation District's Wastewater Treatment Plant. Stormwater runoff from the remaining component areas (approximately 0.7 acres) of the ~~BP Watson~~Watson Project site would be routed to the existing storm drain system and discharged to the Dominguez Channel.

Energy Commission staff reviewed the storm water runoff calculations provided by Watson to evaluate the potential for flooding impacts along the Dominguez Channel downstream of the ~~BP Watson project~~Watson Project. The post development runoff coefficient for the project site will increase slightly over existing conditions due to additional paving planned at the project site. Watson provided runoff calculations for the existing Watson Cogeneration facility for pre-, post-development conditions including the fifth train power block. The pre- and post development discharges for the 10-year and 100-year events are summarized in **Soil & Water Table 4,** below. Based on the hydrology calculations presented, stormwater runoff (peak flow rates and volumes) discharged to the Dominguez Channel from the existing Watson Cogeneration facility would decrease as a result of the ~~BP Watson project~~Watson Project because the proposed project would remove 1.8 acres from the area contributing runoff to the existing storm drain system. Energy Commission staff concluded that the ~~BP Watson project~~Watson Project would not create significant flooding related impacts along the Dominguez Channel.

A Will Serve letter from BP Carson Refinery indicates that the oily water treatment system has sufficient capacity to accept and treat the additional stormwater runoff from the fifth train area (URS, 2010a). The Refinery's oily water treatment system includes storage tanks and reservoirs with a total storage capacity of about 15.4 million cubic feet. The 100-year stormwater runoff volume (42,890 cubic feet) is about 0.28 percent of the total storage capacity in Refinery's oily water treatment system (URS, 2010a). Based on the Will Serve letter and storage volume available, Energy Commission staff concluded that the Refinery's oily water treatment system would have adequate capacity to handle runoff from the fifth train power block at the ~~BP Watson project~~Watson Project.

Energy Commission staff also reviewed Watson's conceptual BMPs for hazardous materials management to limit potentially significant water quality impacts. Secondary containment structures would be built around the oil-filled equipment to prevent dispersion in case of a spill. Hazardous materials would be stored at the existing Watson Cogeneration facility in storage areas equipped with curbs or containment dikes to contain spills or leaks. Solid wastes and small amounts of hazardous waste that are generated at the ~~BP Watson project~~Watson Project would be properly accounted for, tracked, handled, and disposed of off-site using licensed transporters and disposal facilities. Based on the proposed BMPs for hazardous materials management, Energy Commission staff concluded that the ~~BP Watson project~~Watson Project would not result in significant water quality impacts related to a release of hazardous materials.

Soil & Water Table 4
Predevelopment and Post-Development Stormwater Runoff

Site Condition	Area (ac)	Q10 Discharge (cfs)	Q100 Discharge (cfs)	Q10 Volume (ft^3)	Q100 Volume (ft^3)
Pre-development					
Discharge to Storm Drain System	21.7	68.6	105.8	319,650	500,070
Discharge to Oily Water System	0.0	0.0	0.0	0	0

Site Condition	Area (ac)	Q10 Discharge (cfs)	Q100 Discharge (cfs)	Q10 Volume (ft^3)	Q100 Volume (ft^3)
Total	21.7	68.6	105.8	319,650	500,070
Post-development					
Discharge to Storm Drain System	19.9	64.5	99.2	299,500	467,140
Discharge to Oily Water System	1.8	5.9	9.1	27,500	42,890
Total	21.7	70.4	108.3	327,000	510,030

(URS, 2010a)

Energy Commission staff also reviewed Watson's proposed water quality treatment plans to determine if the proposed plans would meet the standards set forth in the Los Angeles County's Municipal Stormwater NPDES Permit (MS4 Permit). The ~~BP Watson project~~Watson Project includes about 0.7 acres of development that would route stormwater to the existing Watson Cogeneration facility's storm drain system with discharge to the Dominguez Channel. Currently, the existing Watson Cogeneration facility incorporates a visual inspection program prior to discharge into the Dominguez Channel. There is a valve upstream of the storm drain outfall that remains closed during dry weather. During storm conditions, personnel from the existing Watson Cogeneration facility inspect the accumulated water in the storm drain. If the water appears clean and clear, the valve is opened and storm water is discharged to the Dominguez Channel. If the water quality is questionable, a vacuum truck is used to remove the water from the sewer box until it is running clear.

Energy Commission staff obtained analysis results for water quality samples collected from the existing Watson Cogeneration facility's storm drain outfall from the Los Angeles RWQCB. The sample analysis results from January, April and November 2007, and January 2008 indicate that stormwater discharged from the existing Watson Cogeneration facility had levels of metals (chromium, lead, and zinc) above California MCLs, low level detections of several polynuclear aromatic hydrocarbons (PAHs), and elevated levels of fecal coliform and e-coli (BP Carson, 2007 and 2008). All samples contained levels of zinc (1.3 to 3.9 mg/l) above the U.S. EPA Benchmark Value for stormwater (0.117 mg/l). Two of the four samples contained levels of copper (0.09 to 0.093 mg/l) above the stormwater benchmark (0.0636 mg/l). One sample contained pyrene at 0.0068 mg/l, just below the benchmark of 0.01 mg/l. The Dominguez Channel Estuary is listed as an impaired water body due to high levels of a number of contaminants including chromium, lead, zinc, and PAHs (RWQCB, 2009).

The MS4 Permit requires all new development and redevelopment projects to minimize the discharge of pollutants of concern. Development projects are required to include water quality treatment BMPs to treat stormwater the "maximum extent practicable" to limit discharge of pollutants of concern. The MS4 Permit includes a numerical design standard for post-construction treatment BMPs to treat stormwater runoff from the first ¾ inch of rainfall (or for a flow rate generated by a rainfall intensity of 0.2 inches per hour) prior to discharge to a receiving water (RWQCB, 2009).

The stormwater sample analysis results indicate pollutants of concern are currently being discharged from the existing Watson Cogeneration facility including several at or above the EPA stormwater benchmark values. Energy Commission staff is concerned that the proposed stormwater discharge approach at the existing Watson Cogeneration facility and the ~~BP Watson project~~Watson Project (visual inspection and discharge) does not meet the "maximum extent practicable" standard. The MS4 Permit identifies a clear numerical treatment standard for a treatment control BMP for stormwater prior to discharge to the Dominguez Channel. Without implementation of a treatment control BMP, the ~~BP Watson project~~Watson Project could lead to potentially significant adverse impacts to stormwater quality in the Dominguez Channel. As part of the development of the ~~BP Watson project~~Watson Project, Watson should install a treatment BMP to target suspended sediment, metals, hydrocarbons, and PAHs in stormwater runoff discharged from all areas redeveloped as part of the ~~BP Watson project~~Watson Project to comply with the MS4 Permit and to mitigate potentially significant adverse stormwater quality impacts.

The City of Carson has requested that Watson voluntarily implement water quality treatment BMPs that address the entire existing Watson Cogeneration facility (CEC, 2010f). The RWQCB is expected to adopt Total Maximum Daily Loads (TMDLs) for the Dominguez Channel within the next couple of years to address numerous pollutants of concern (CEC, 2010f). Once the TMDLs are adopted, the existing Watson Cogeneration facility and BP Carson Refinery will be required to install water quality treatment BMPs to address discharge of pollutants of concern under the Refinery's Industrial Stormwater NPDES permit (CEC, 2010f). Given the impending requirement for treatment, Energy Commission staff recommends that Watson implement water quality treatment for the entire existing Watson Cogeneration facility as part of the ~~BP Watson project~~Watson Project.

Given the highly industrial nature of the project site including existing impacts to soils and groundwater, Energy Commission staff recommends that Watson consider use of subsurface media filtration system sized to treat the runoff from the combined ~~BP Watson project~~Watson Project and existing Watson Cogeneration facility site. Provided that an appropriately sized treatment BMP that meets the MS4 Permit requirements is implemented with the ~~BP Watson project~~Watson Project, Energy Commission staff believes that potentially significant stormwater quality impacts would be mitigated to a less than significant level.

Conditions of Certification **SOIL&WATER-1**, **-3**, and **-4** require the project owner to prepare plans for implementing, monitoring and maintaining BMPs appropriate for the operating phase in the form of a DESCP, SUSMP, and SWPPP for Industrial activity. The goal of the DESCP as required by the Energy Commission is to provide detailed storm drainage and erosion control plans and to identify and implement appropriate BMPs to limit stormwater and erosion related impacts. The goal of the Industrial SWPPP as required by the RWQCB is to identify potential sources of contaminants that could be present during project operations, assure adequate BMPs for preventing pollution of soil and water resources are incorporated into the project's final design and implemented. Condition of Certification **SOIL&WATER-3** requires Watson to prepare and submit for approval a SUSMP as required under Los Angeles County's MS4 Permit. The SUSMP would identify pollutants of concern and the means to minimize the

discharge of these pollutants from the project site using numerically sized BMPs. Compliance with Conditions of Certifications **SOIL&WATER-2**, **-3**, and **-4** will ensure there are no significant impacts or conveyance of pollutants to soil and water resources down-gradient of the project site.

Surface Water Flooding

The ~~BP Watson~~Watson Project site is designated as a "C" flood zone for flood management indicating that the project site is outside of the designated 100-year floodplain and the potential for flooding is low (Watson, 2009a). As discussed above, the peak discharge to the Dominguez Channel from the existing Watson Cogeneration facility would decrease as a result of the ~~BP Watson project~~Watson Project for both the 10-year and 100-year storm events. The proposed project would not alter drainage patterns or increase flow rates in Dominguez Channel. Energy Commission staff believes that the operation of the ~~BP Watson project~~Watson Project would not adversely affect surface waters or increase flooding in the vicinity of the project site.

Project Operations Water Supply

Watson proposes to use the Watson Cogeneration Project's freshwater supply for the existing four train plant to supply the combined five trains. Watson proposes to maintain annual water supply at baseline levels of up to 4,609 AFY based on the previous 11 years of operation (2000-2010) of the Watson Cogeneration Project. Watson would utilize reclaimed water if combined Watson Cogeneration and ~~BP Watson~~Watson Project water use increased above the cap to allow the combined units to provide additional steam and high pressure water to the BP Carson Refinery. However, as currently proposed, the project does not yet have additional water supply secured beyond operating ~~BP Watson~~the Watson Project under a combined Watson Cogeneration / ~~BP Watson~~Watson Project cap on freshwater use. Any increases in combined use water would be reclaimed water. The ~~BP Watson~~Watson Project fifth train would utilize about 1,718 AFY of water (URS, 2011b). However, Watson has not identified a reclaimed water supplier or secured a reclaimed water supply, and so the project may not able to meet one of its primary objectives to provide additional (beyond quantities already supplied by Watson Cogeneration) steam to the BP Carson Refinery. Energy Commission staff examined the proposed freshwater supply to determine if the water use would result in significant impacts to existing water supplies or other users. The freshwater supply includes a blend of groundwater pumped at the BP Carson Refinery and municipal water comprised of 70-80 percent imported water and 20-30 percent groundwater. Energy Commission staff identified four areas of concern related to the proposed freshwater supply:

1. The "baseline" supply proposed by the applicant is based on the previous 11 years of water use at the existing four-train Watson Cogeneration Project including several years of significantly higher water use in the early 2000's and lower levels of water use during the past three to five years. Using the 11-year period of record to define "baseline" water use ~~actually~~ results in an ~~significant~~ increase in freshwater use as compared to the previous three to five years. ~~Given the recent changes in water policy and the significant allocation reductions for the State Water Project over the past three years, increasing water supply as compared to the previous three years could cause significant impacts to other users who could face additional allocation~~

~~reductions to make up for an increase in supply~~. However, ~~the applicant does not adequately explain why it limited the water consumption information to~~ the most recent 11 years more fully captures the multiple variables that influence Watson Cogeneration Project's water needs.

2. The groundwater pumping in the West Coast Basin including pumping at the BP Carson Refinery contributes to sea water intrusion impacts to the West Coast Basin groundwater aquifer. To address these impacts, all pumpers in the basin (including BP Carson Refinery) pay fees to the Water Replenishment District of Southern California to operate the Dominguez Gap Water Replenishment Project with injection wells along the Dominguez Channel only 2,000 feet from the ~~BP Watson project~~Watson Project site. Energy Commission staff examined how the project's groundwater pumping contributes to the sea water intrusion impacts.

3. The California Constitution, California Water Code, State Water Resources Control Board policies, and Energy Commission Policies require industrial users such as the ~~BP Watson project~~Watson Project to utilize reclaimed water if it is available at a cost comparable to existing freshwater supplies. Energy Commission staff worked with the West Basin Municipal Water District to compare the costs of providing reclaimed water for the ~~BP Watson Project~~Watson Project as compared to the proposed freshwater supply.

4. The proposed water supply rates for the fifth train are significantly higher than for a conventional gas fired, wet cooled facility because the primary purpose of the ~~BP Watson project~~Watson Project is to provide steam to the BP Carson Refinery. Energy Commission staff has identified efficiency targets for delivery of steam and high pressure water to the BP Carson Refinery that ensure that the ~~BP Watson project~~Watson Project efficiently utilizes water supplies required for electrical power generation while providing for the steam requirements at the BP Carson Refinery.

Energy Commission staff also examined the use of reclaimed water supply to augment the proposed freshwater supply to determine if the use of reclaimed water would result in significant impacts to existing water supplies or users or the environment. In addition, the use of reclaimed water, particularly for evaporative cooling, could pose a public health hazard if not treated to adequate standards. Finally, use of reclaimed water could lead to potentially significant impacts if the reclaimed water was to cross contaminate existing potable supply lines.

Baseline Water Supply

Watson has proposed to utilize the current freshwater supply for the existing Watson Cogeneration Project (four train plant) with no net increase in the average annual freshwater use for the ~~BP Watson Project~~Watson Project including all five trains. Annual water usage for the existing four-train Watson Cogeneration Project is presented below in **Soil & Water Table 5.**

Watson has identified the average annual raw freshwater use over the previous 11-years (2000-2010) of 4,609 AFY as the "baseline" water use for the Watson Cogeneration Project. The applicant ~~arbitrarily~~ chose to use an 11-year period as this was the period of record for freshwater use available at the time of application, and the

applicant believes that this longer period more accurately captures the range of variables that impact freshwater use at the Watson Cogeneration Project. ~~and did not adequately explain why it chose an 11-year record. The~~ Although, the plant has been operating since 1988, and water use data for a much longer period should be available ~~to evaluate what the representative freshwater use is at the site~~, use of the 2000-2011 period sufficiently captures the range of recent water demands at the plant. ~~Staff requested all water use data for plant operations so a reasonable estimate of average or typical water use could be developed however, the applicant only provided water use data from the past 11 years of operations.~~

As seen in **Soil & Water Table 5**, average annual raw water use over the more recent three- and five-year periods (4,219 and 4,346 AFY) was ~~significantly~~ lower than earlier in the decade. However, incorporation of all eleven years in the baseline reflects variables impacting water use at the plant, such as freshwater supply, ambient temperature, humidity, and BP Carson Refinery steam demand.

~~The Applicant's estimate of "baseline" water supply would actually result in an increase in total freshwater supply as compared to 2008-2010 period of 390 AFY or over a nine percent increase over the most recent three-year period.~~

~~CEQA guidelines (Section 15162) indicate that proposed projects with a previous Environmental Impact Report (i.e. the CEQA equivalent Energy Commission Staff Assessment) should be considered against the impacts considered in the original EIR. Thus, anticipated impacts for a currently proposed project should be compared to impacts analyzed in the original CEQA document. The Energy Commission staff analysis for the Watson Cogeneration Project published in March 1986, considered the use of 2,577 gpm or about 4,157 AFY of freshwater for the Watson Cogeneration Plant (CEC, 1986). Thus, the Applicant's estimate of current baseline water supply at Watson Cogeneration is about 11 percent higher than the baseline water supply considered in the original licensing proceeding for the Watson Cogeneration Project.~~

~~Energy Commission staff is concerned that the proposed increase in freshwater supply would require an increase in groundwater pumping and/or an increase in imports from the~~

~~State Water Project (SWP) and the Colorado River. Both the SWP and Colorado River have been experiencing historic shortages, and the groundwater basin is already significantly over pumped requiring an extensive water replenishment program to address sea water intrusion and local management through an adjudicated plan.~~

~~The SWP has experienced frequent reductions in water allocations to water supply districts due to regulatory restrictions during drought periods. During periods of limited allocations, water users serviced by SWP contractors are required to limit their use of water. South of the Delta, agricultural users have had full allocations only one of the past ten years and have had their allocations cut by 25-60 percent in seven of the past ten years and cut by 90 percent in 2009. In 2011, even with record levels of snowpack, allocations to agricultural users are currently only set at 80 percent, illustrating the new reality of ongoing reduced water supply allocations.~~

~~In Resolution 2010-0039, the State Water Resources Control Board recently determined that the Sacramento-San Joaquin Delta is in ecological crisis and that recent Delta flows have been inadequate to support aquatic habitat for endangered native fish species (SWRCB 2010). Returns of salmon on the Sacramento River have declined by 97 percent since 2002, reaching critical levels that required the suspension of commercial and recreational fishing in 2008 and 2009 (PMFC, 2010). The Delta Stewardship Council's Draft Delta Plan concluded that California's total water supply is oversubscribed (DSC, 2011). When water exports from the Delta are reduced, the consequence is increased demand on an already overused and unsustainable groundwater system (DSC, 2011). The Stewardship Council also concluded that the Delta system has already been altered to the extent that some native species may not survive (DSC, 2011).~~

~~In addition, as required in the Delta Reform Act (SBX7 1), the SWRCB released new flow criteria for the Delta in Resolution 2010-0039 designed to protect federal and state listed endangered species that depend upon aquatic habitat in the Delta for survival (SWRCB 2010). These criteria indicate that the Delta outflows should be increased to about 75 percent of natural unimpaired flows from November through June to support endangered fish species (SWRCB 2010). By comparison, during drought years in the early 1990s and early 2000s (coinciding with the highest water use at the Watson Cogeneration Project), outflows were reduced to about 30 percent of natural flows (SWRCB 2010). Thus, the SWRCB is recommending that Delta diversions would need to be cut by about 65 percent from the historic levels during drought years to address the significant impacts to the Delta.~~

Soil & Water Table 5
Average Annual Water Use – Watson Cogeneration Project (four trains)

Year	Average Daily Water Use (mgd)	Annual Water Use (acre-feet)
2000	4.0	4,481
2001	4.4	4,929
2002	4.5	5,041
2003	4.5	5,041
2004	4.2	4,705
2005	4.3	4,817
2006	4.0	4,481
2007	4.1	4,593
2008	3.8	4,257
2009	3.8	4,257
2010	3.7	4,145
11-year average (2000 – 2010)	4.12	4,609
5-year average (2006 – 2010)	3.88	4,346
3-year average (2008 – 2010)	3.77	4,219
~~1986 Staff Assessment~~	~~3.71~~	~~4,157~~

Table 5.5-3A (URS, 2011b)

~~The SWRCB indicated that the determinations in Resolution 2010-0039 do not have regulatory or adjudicatory effect (SWRCB 2010). When the SWRCB develops Delta flow objectives with regulatory effect, it must ensure the reasonable protection of beneficial uses, which may entail balancing of competing beneficial uses of water, including municipal and industrial uses, agricultural uses, and other environmental uses (SWRCB 2010). The SWRCB will evaluate the effect of any changes in flow objectives on the environment of the Delta, the upgradient watersheds, and the areas where Delta water is used, as well as, an evaluation of economic impacts (SWRCB 2010). The SWRCB indicated that it may amend the terms and conditions of water right permits and licenses to impose further limitations on the diversion and use of water by water rights holders to protect the Delta or to meet water quality and flow objectives in Water Quality Control Plans it has adopted (SWRCB 2010). The SWRCB also indicated that it may impose~~

~~restrictions in diversions by the CVP and SWP when the Department of Water Resources and US Bureau of Reclamation seek to change points of diversion for the CVP and SWP as part of a proposed peripheral canal (SWRCB 2010). The report will also be used for development of the 'Delta Plan', also required in the Delta Reform Act, which will identify policies and actions responsible resource agencies must implement for improved water supply reliability and protection of the Delta ecosystem.~~

~~As new Delta flow criteria or other regulatory means are adopted in the future to protect the environment within the Delta, SWP allocations are likely to significantly decline to levels at or below the allocation restrictions seen over the past 10 years. As SWP restrictions on water allocations to municipal, industrial and agricultural users become more frequent and significant due to pumping restrictions in the Delta, Staff believes that other existing water users may be impacted by the proposed increase in the use of freshwater for BP Watson operations.~~

~~In addition the Colorado River has also been experiencing a historic drought. The U.S. Bureau of Reclamation's June 2011 Colorado River Basin Water Supply and Demand Study indicates that water supplies on the Colorado River are anticipated to further decrease by about 9 percent over the next fifty years due to climate change with a projected increase in both drought frequency and duration (USBR, 2011). Droughts lasting 5 years or more are projected to occur 40 percent of the time over the next 50 years (USBR, 2011). Meanwhile consumptive uses derived from the Colorado River have increased by 23 percent between 1971 and 1999 (USBR, 2011). Energy Commission staff is concerned that as demand outstrips supply in the future, supplies of Colorado River water imported into the Los Angeles Basin will be reduced.~~

Energy Commission staff is concerned that as demand outstrips supply in the future, supplies of Colorado River water imported into the Los Angeles Basin will be reduced

Given the reality of water supplies imported from the SWP and Colorado River and the policies and goals identified by the SWRCB over the past three years, Energy Commission staff believes that ~~any~~ increase<u>s</u> in freshwater supply at ~~BP Watson~~<u>the Watson Project</u> over the prior ~~three~~ <u>eleven</u> year average could <u>possibly</u> exacerbate an already critical situation and cause significant impacts to other users. Therefore, Energy Commission staff recommends that the baseline water use be set at ~~4,219~~4,609 AFY based on the most recent, most representative, ~~three~~ <u>11</u> years of operation at the Watson Cogeneration Project. ~~Energy Commission staff's recommended baseline water use would allow an increase of 62 AFY above than the annual water use analyzed in the original 1986 Watson Cogeneration Staff Analysis (CEC, 1986).~~ Condition of Certification **SOIL&WATER-5** requires that total raw freshwater use including municipal water provided by California Water Services Company and groundwater from onsite wells for all five trains at ~~BP Watson~~<u>the Watson Cogeneration Facility (including the Watson Project)</u> not exceed ~~4,219~~4,609 AFY<u>, as conditioned</u>.

<u>Seawater Intrusion</u>

Pumping in the West Coast Basin, particularly close to the Pacific Ocean, has resulted in significant sea water intrusion impacts to the aquifer.

Energy Commission staff requested information including pumping rates, groundwater levels, and groundwater quality data related to sea water intrusion impacts caused by

the groundwater pumping used to supply Watson Cogeneration and proposed to supply the fifth train in several data requests. In response, Watson provided pumping records for Well 13 that supplies the Watson Cogeneration Facility and other BP Refinery uses. The pumping records indicate that between 2000 and 2009, pumping at Well 13 averaged 1,476 AFY and ranged between a low of 667 AFY in 2007 to a maximum of 2,160 AFY in 2001. Watson declined to provide any data on historic water level trends or on water quality which staff could use to help assess sea water intrusion impacts associated with the groundwater pumping used to supply the Watson Cogeneration Facility and proposed for ~~BP Watson~~the Watson Project. Watson indicated that providing information on groundwater levels or water quality was objectionable because it would be "regarding operation of the existing BP Refinery rather than the proposed project… Information regarding the BP Refinery is beyond the scope of this proceeding, not relevant, and unduly burdensome" (URS, 2011c).

Energy Commission staff contacted the Water Replenishment District and reviewed a technical bulletin by Ted Johnson, Chief Hydrogeologist, at the Water Replenishment District to develop a better understanding of the sea water intrusion impacts associated with pumping groundwater from onsite wells at the BP Carson Refinery (CEC, 2011f and Johnson, 2007).

In the early half of the 20th century, groundwater extractions in the West Coast Basin were double natural replenishment, causing severe overdraft and lowering groundwater elevations to over 100 feet below sea level, greatly increasing the extent of sea water intrusion inland. (Johnson, 2007). This impact is mitigated through groundwater recharge at the West Coast Basin Barrier Project along Santa Monica Bay and the Dominguez Gap Barrier Project along San Pedro Bay. The groundwater recharge projects are operated by the Water Replenishment District of Southern California and have been successfully protecting the West Coast Basin aquifer for over 50 years (Johnson, 2007).

The Dominguez Gap Barrier Project is adjacent to the ~~BP Watson~~Watson Project site, within about 1 mile of the pumping wells at the BP Carson Refinery that supply water to the Watson Cogeneration Project. The Dominguez Gap Barrier Project covers about 6 miles with 94 injection wells and 232 observation wells (Johnson, 2007). In 2008, operational costs for the Dominguez Gap Barrier and West Coast Basin Barrier Projects included about $14 million for recycled and imported water and about $4 to $5 million in maintenance costs (Johnson, 2007). Due to aging infrastructure, rising water and maintenance costs, and the uncertainty of long-term potable water availability, the local agencies that cooperate on the management of the barrier projects are working together to develop alternatives to optimize barrier performance while minimizing costs. In particular, if regional groundwater levels rose in response to reduced pumping, barrier efforts and costs would be reduced. One of the primary methods identified to address these increasing mitigation costs would be to replace groundwater from wells along the coast that is used only for industrial purposes (specifically including at BP Carson Refinery) with recycled water (Johnson, 2007).

In 2010, water replenishment efforts required 23,619 acre-feet as compared to a total of 43,669 acre-feet pumped from the West Coast Basin. Thus, a replenishment rate of about 54 percent is required across the basin to address the sea water intrusion

impacts. However, since the ~~BP Watson project~~Watson Project site is adjacent to the Dominguez Gap Barrier, the groundwater pumped to supply ~~BP Watson~~the Watson Project is primarily comprised of water pumped into the Dominguez Gap Barrier Project. The Water Replenishment District estimates that about 70 percent of the water pumped by the BP Carson Refinery to supply the Watson Cogeneration Project is water pumped into the Dominguez Gap Barrier Project (CEC, 2011f).

In addition, pumpers within the West Coast Basin pay below market rates to support the Water Replenishment District's efforts. Groundwater users currently pay a replenishment fee of $244 per acre foot pumped. However, at the Dominguez Gap Barrier Project 5,644 acre feet of imported potable water purchased at market rates was required to augment 2,055 acre feet of recycled water pumped into the project in 2010. Beginning in January 2012, the market rate for imported water supplied by the WBMWD for the Dominguez Gap Barrier Project will be $1,024 per acre-foot.

Watson indicates that an average of 1,534 AFY of groundwater pumped from onsite wells is utilized to supply the Watson Cogeneration Project (URS, 2011b). To fully mitigate sea water intrusion impacts caused by this pumping, Watson would need to contribute $1.1 million to purchase imported water (0.7 * 1,534 acre feet * $1,024/acre-foot) plus an additional $390,000 to fund maintenance activities ($5 million * $1.1 million/$14 million). By comparison, Watson only contributes about $375,000 for water replenishment activities to mitigate its groundwater pumping (based on 1,534 AFY). Thus, the local agencies that finance and operate the water replenishment program and other water users (i.e. rate payers) within the West Coast Basin are subsidizing mitigation of the impacts caused by groundwater use at the Watson Cogeneration Project. Watson's contribution to the Water Replenishment District's costs covers maintenance of the replenishment barrier project infrastructure, but does not cover the costs of the water used to support the replenishment efforts.

Energy Commission staff understands, however, the BP Carson Refinery is pumping groundwater to supply the Watson Cogeneration in accordance with their adjudicated right and rights leased from other properties in the Basin, and is paying for replenishment water in accordance with local agreements.

Reclaimed Water – Economic Feasibility

Watson proposes to utilize reclaimed water to augment the primary freshwater supply for ~~BP Watson~~the Watson Project "if and when" it becomes available. Additional reclaimed water supplies are required for ~~BP Watson~~the Watson Project to satisfy the project's ~~primary~~ objective to increase steam supplies to the BP Cason Refinery (although additional water supplies are not required to satisfy the other project objectives of reliability and electrical energy generation). Watson is relying upon the BP Carson Refinery to complete negotiations and to implement a reclaimed water supply for the project with the West Basin Municipal Water District. BP Carson Refinery has been in negotiations with WBMWD to secure additional reclaimed water supplies for the Watson Cogeneration Project since June of 2008, and although the parties have yet to come to an agreement ~~after more than three years of negotiations~~, the parties have entered into a memorandum of understanding to negotiate and execute an agreement to supply recycled water to the BP Carson Refinery.

Under the California Constitution (Section 2, Article X), the California Water Code encourages the conservation of water resources and the maximum reuse of wastewater particularly in areas of limited supply such as the West Coast Basin which imports about 65 percent of all water used within the Basin. The Water Code (Sections 13550 and 13552.6) indicates that use of potable water for industrial uses including power plant cooling and refinery operations is a waste and unreasonable use of water if sources of reclaimed water are available at costs "comparable" to that of potable freshwater.

Energy Commission staff examined the viability of providing reclaimed water from the WBMWD to supply some or all of the water supply requirements at ~~BP Watson~~the Watson Project. The WBMWD receives secondary treated wastewater water from the Hyperion Wastewater Treatment Plant owned by the City of Los Angeles. The WBMWD further treats the wastewater to meet its customer's needs. The secondary treated wastewater is treated to tertiary standards in El Segundo at the Edward C. Little Water Recycling Facility. The WBMWD maintains hundreds of miles of pipelines to deliver various levels of treated wastewater to its customers. For the BP Carson Refinery, WBMWD currently provides approximately 1,000 AFY of nitrified reclaimed water and 4,000 AFY of Single Pass Reverse Osmosis (RO) reclaimed water produced at the Carson Regional Water Recycling Facility about 1.5 miles from the BP Carson Refinery (CEC, 2011e).

WBMWD is currently in negotiations with BP Carson Refinery for a project to increase production and delivery of recycled water by about 2,100 AFY including about 800 AFY of nitrified treated reclaimed water and 1,300 AFY of single pass RO reclaimed water (CEC, 2011e). The proposed project would add additional micro-filtration capacity to the existing micro-filtration system at the Carson Regional Water Recycling Facility to match the capacity of the existing single pass RO system already in use to supply the BP Carson Refinery. The micro-filtration expansion project is expected to cost about $18.3 million of which about $4.5 million would be paid for by WBMWD, $2.4 million would be paid for via a grant from Cal Water, leaving $11.3 million in capital costs to pass through to BP (CEC, 2011e). The capital costs would be financed either through a 6 percent, 25 year bond issue by WBMWD or via a 2.5 percent, 20 year financing package through the SWRCB (CEC, 2011e). All capital costs would be subject to a 1.6 debt recovery ratio (CEC, 2011e).

Reclaimed water rates for the BP Carson Refinery would include both capital costs and commodity costs. Current commodity costs include: $964/AF for potable water ($1,024/AF beginning in January 2012), $1,003/AF for single pass RO reclaimed water, and $755 for nitrified reclaimed water (CEC, 2011e). BP Carson Refinery currently pays capital costs of $1,127/AF for single pass RO reclaimed and $847/AF for nitrified reclaimed water (CEC, 2011e). Commodity costs for single pass RO and nitrified reclaimed water include energy costs and maintenance associated with operating the micro-filtration and RO systems.

A breakdown of the capital and commodity costs for single pass RO and nitrified reclaimed water for the proposed expansion of the micro-filtration system is provided below in **Soil & Water Table 6.** The reclaimed water provided by the proposed expansion of the micro-filtration system at the Carson Regional Water Recycling Facility would result in an estimated total cost of $1,308 per acre-foot for nitrified reclaimed

water and $1,556 for single pass RO treated reclaimed water including both capital and commodity costs.

The recycled water provided by WBMWD would be of much higher quality than ~~BP Watson~~the Watson Cogeneration Facility's current raw freshwater supplies of groundwater and municipal water. TDS would be reduced from about 900 parts per million (ppm) in ~~BP Watson~~the Watson Cogeneration Facility's existing freshwater supplies to about 60 parts per thousand for single pass RO reclaimed water. ~~BP Watson~~The Watson Project would utilize second pass RO onsite, to further reduce TDS down to about 5 ppm. Reject water from the second pass RO process would be utilized for cooling tower make up.

Energy Commission staff requested information on the efficiency of water treatment processes utilized at Watson's dedicated water treatment facility to treat raw freshwater with reverse osmosis and micro-filtration. Energy Commission staff also requested the maintenance and operational costs of the onsite treatment of raw freshwater proposed for use at the proposed fifth train. Energy Commission staff requested this information to develop a realistic comparison of the actual costs of freshwater supply to the proposed reclaimed water project through WBMWD. However, Watson indicated that providing information on the efficiency or operations and maintenance costs of the onsite water treatment system that is proposed to treat the water supply for ~~BP Watson~~the Watson Project is "beyond the scope of this proceeding, not relevant, and unduly burdensome" (URS, 2011c).

Based on information provided by Watson, Energy Commission staff assumes that the onsite water treatment processes include reverse osmosis for process water that is about 80 percent efficient (URS, 2011b). Thus, to provide the 1,279 AFY of treated process for the fifth train, up to 1,598 AFY of raw freshwater would be required. In negotiations with WBMWD, the BP Carson Refinery indicated that the costs for onsite treatment of groundwater and municipal water are about $200 per acre-foot (CEC, 2011e). However, the WBMWD's consultants specializing in industrial water treatment estimated that the costs of onsite treatment were likely as high as $400 - $500 per acre-foot, which are more in line with the costs of industrial scale water treatment processes utilized by WBMWD (CEC, 2011e). Given a market rate of $1,024 per acre-foot for potable municipal water and an 80 percent efficient treatment process, the additional onsite treatment costs bring the costs of treated fresh water to about $1,480 per acre-foot ($1,480 = $1,024/0.8+$200) based on BP Carson Refinery's negotiating position. Using WBMWD's estimated costs for Watson's onsite treatment, the costs for reverse osmosis treated raw freshwater are a more likely $1,680 to $1,780 per acre-foot. In addition, the costs for municipal potable water are rapidly increasing – between July 2011 and January 2012, the cost will increase by 6 percent from $964 to $1,024 per acre-foot. Over time, these cost increases will further increase the cost of potable water supplied to ~~BP Watson~~the Watson Project.

Thus, reclaimed water provided by the proposed expansion of the micro-filtration system at the Carson Regional Water Recycling Facility with an estimated total cost of $1,308 per acre-foot for nitrified reclaimed water and $1,556 for single pass RO treated reclaimed water is "comparable" to the current costs of ~~BP Watson~~the Watson Cogeneration Facility's existing freshwater supply including the costs for treatment and

losses to reverse osmosis reject. Once the 20-year capital recovery period is completed, the costs for both single pass RO treated reclaimed water and nitrified reclaimed water will decline.

WBMWD indicated that they could implement the additional 2,100 AFY of reclaimed water capacity within 24-30 months of executing an agreement with BP Carson Refinery (CEC, 2011e).

Soil & Water Table 6
Reclaimed Water Costs for Additional Supply from the Carson Regional Water Recycling Facility

Additional Capacity for Single Pass RO	1,300 AFY
Additional Capacity for Nitrified Water	800 AFY
Total Additional Reclaimed Capacity	2,100 AFY
Expanded Micro-Filtration – Total Capital Costs	$18.3 Million
Capital Costs covered by WBMWD	$4.5 Million
Capital Costs covered by Cal Water Grant	$2.4 Million
Capital Costs passed on to BP	$11.3 Million
Annual Finance Costs (SWRCB Financing – 20 years at 2.5% interest)	$725,500
Debt Recovery Ratio (1.6 x Annual Capital Costs)	$1.16 Million
Capital Cost (per acre foot based on 2,100 AFY)	$553 per acre-foot
Total Cost – Single Pass RO (including $1,003/AF commodity costs)	$1,556 per acre-foot
Total Cost – Nitrified Water (including $755/AF commodity costs)	$1,308 per acre-foot

Energy Commission staff also examined the potential to implement a large reclaimed water project to replace all fresh water use at the Watson Cogeneration Project. However, the WBMWD is also expanding nitrified capacity to serve an additional 9,000 AFY to the City of Los Angeles from the Carson Regional Water Recycling Facility. Thus, major additional infrastructure would be required either at the Carson Regional Water Recycling Facility or at the Joint Water Pollution Control Plant. If micro-filtration and single pass RO was added to the Joint Water Pollution Control Plant to provide additional water to the Watson Cogeneration Project, new pipelines would be required to deliver the additional reclaimed water to the ~~BP Watson~~Watson Project/Watson Cogeneration project. The WBMWD examined the potential to develop a 5,806 AFY project at the Joint Water Pollution Control Plant including additional pipelines to the BP Carson Refinery in their 2009 Capital Improvement Master Plan (WBMWD, 2009).

Projected capital costs include about $86 million for implementation of micro-filtration and single pass RO including the required pipelines and pump stations to deliver the

reclaimed water to the BP Carson Refinery (WBMWD, 2009). For implementation of the nitrified treated reclaimed water including micro-filtration and the associated pipelines and storage reservoir would be about $48 million (WBMWD, 2009). Total capital costs for a larger capital improvement to provide at least 5,806 AFY to BP Carson and Watson Cogeneration Project would be $134 million. With favorable financing from the SWRCB and the 1.6 debt recovery ratio, the capital costs would be about $2,370 per acre-foot over the twenty year finance period. While these costs are not currently "comparable" to the costs of municipal potable water, Energy Commission staff recommends that the BP Carson Refinery and Watson continue to examine the potential to develop a large reclaimed water project to replace all industrial uses of freshwater at ~~BP Watson~~the Watson Project ~~and the BP Carson Refinery~~.

Thus, Energy Commission staff determined that up to 2,100 AFY of reclaimed water is economically feasible and will be available within 24-30 months of executing an agreement with WBMWD to provide reclaimed water to ~~BP Watson~~the Watson Project. ~~Condition of Certification **SOIL&WATER-5** requires that Watson submit a fully executed agreement to provide new reclaimed water to supply BP Watson prior to commencing operation of BP Watson.~~

Water Supply Efficiency

The total proposed water supply for the ~~BP Watson project~~Watson Project would be significantly greater than for a combined cycle generating facility of a similar capacity that primarily generates electricity because the primary purpose for the project is to provide steam to the BP Carson Refinery. The average annual water demand for the fifth train at ~~BP Watson project~~Watson Project would be approximately 2,724 acre-feet including approximately 2,286 AFY of treated process water and 439 AFY of cooling tower makeup water. This annual water demand is about 32 AFY/MW, which is significantly higher than atypical wet cooled, combined cycle power plant in California. However, about 2,190 AFY of the total water supplied to the ~~BP Watson project~~Watson Project would be delivered to the BP Carson Refinery as steam and high pressure water supplies. Thus, about 80.4 percent of the total water supplied to the ~~BP Watson project~~Watson Project or about 95.8 percent of the process water supplied to the Fifth Train would be delivered to the BP Carson Refinery in the form of steam and high pressure water. The water use efficiency for the ~~BP Watson project~~Watson Project generation, i.e. total water supply less the steam and water supplied to the BP Carson Refinery, would be about 534 AFY or about 6.3 AFY/MW, which is typical for wet cooled combined cycle power plants in California.

To monitor water use, the ~~BP Watson project~~Watson Project is required to install and maintain metering devices as part of the water supply and distribution system to monitor the use of raw groundwater pumped from onsite wells, raw potable municipal water, and raw reclaimed water supplied to the project for process, cooling water, domestic potable water, and other plant uses. Condition of Certification **SOIL&WATER-5** requires installation and monitoring of metering devices on all water supply lines at ~~BP Watson~~the Watson Project. To limit the use of the municipal and groundwater water supplies beyond the quantities evaluated in this Staff Assessment, Condition of Certification **SOIL&WATER-5** requires ~~BP Watson~~the Watson Project to limit total freshwater use to ~~4,219~~4,609 AFY.

To help demonstrate that the ~~BP Watson project~~Watson Project is efficiently utilizing the water supplied to the project, delivery of steam and high pressure water to BP Carson Refinery should also be monitored with a goal of delivering a minimum of 95.8 percent of all process water supplied to the Fifth Train to the BP Carson Refinery as steam or high pressure water. This goal of 95.8 percent delivery, will ensure that the ~~BP Watson project~~Watson Project is efficiently utilizing the water supplied to the power plant in line with other wet cooled, combined cycle power plants in California. In addition, to ensure there is no net increase in raw water use at the Watson Cogeneration facilities staff recommends the condensate return to ~~BP Watson~~the Watson Project from Watson Cogeneration or the BP Refinery should be from steam supplied from ~~BP Watson~~the Watson Project or Watson Cogeneration, and should not be augmented with additional water at Watson Cogeneration or the BP Carson Refinery. Conditions of Certification **SOIL&WATER-6** and **-9** require installation and monitoring of metering devices on the process supply lines to ~~BP Watson~~the Watson Project and the steam and high-pressure water lines that deliver water to the BP Carson Refinery and to ~~BP Watson~~the Watson Project. All metering devices should be operational for the life of the project. An annual summary of water use and delivery of steam and water to BP Carson Refinery shall be submitted to the Compliance Project Manager in the annual compliance report.

Reclaimed Water – Impacts and Conditions

Watson indicates that the ~~BP Watson project~~Watson Project would use reclaimed water that BP Refinery would obtain from WBMWD if water use at the combined ~~BP Watson~~Watson Project and Watson Cogeneration facilities exceeded the cap. Energy Commission staff have determined that a minimum of 2,100 AFY of reclaimed water can be available for the ~~BP Watson project~~Watson ProjectBP Refinery within three years of the start of construction of the Watson Project.

The reclaimed water supply will be available in two forms. About 800 AFY of nitrified water would be available for the cooling towers for the existing Watson Cogeneration facility and the two additional towers proposed for the ~~BP Watson project~~Watson Project. About 1,300 AFY of single pass RO water would be available for inlet evaporative cooling, HRSG supply, and steam supply for the BP Carson Refinery.

The proposed reclaimed water supply is wastewater treatment plant effluent from WBMWD's Carson Regional Water Recycling Facility that has received tertiary treatment to Title 22 standards, micro-filtration and either nitrification or single pass RO treatment. Unused wastewater in the region is discharged to the Pacific Ocean. Use of the proposed reclaimed supply to provide additional water supplies would prevent any increase in the combined use of municipal water and groundwater at ~~BP Watson~~the Watson Project, the existing Watson Cogeneration facility, and at the BP Carson Refinery (URS, 2011b). While the use of reclaimed water supply reduces reliance on fresh water sources, reclaimed water has numerous beneficial uses including for agricultural and landscape irrigation, industrial uses, and other non-potable purposes and reclaimed water should also be utilized as efficiently as possible.

The use of disinfected tertiary treated recycled water produced from reclaimed wastewater could pose a public health hazard and must meet the California Code of Regulations, Title 22, Division 4 requirements for "unrestricted use." All recycled water

pipelines, storage tanks, and ancillary facilities would be constructed in compliance with Titles 17 and 22.

Title 17 addresses the requirements for back flow prevention and cross connections. Dual plumbing would be required for plant water that may be supplied from either tertiary treated nitrified or RO reclaimed water or municipal supplies. Use of tertiary treated nitrified or RO reclaimed water could lead to significant adverse impacts to municipal water supplies if the reclaimed water cross-contaminates the municipal supply pipelines. To address the potential for impacts to municipal supplies, a dual plumbing plan shall be prepared in accordance with Title 17 requirements. The California Department of Public Health would also perform and inspection of the implementation of the dual plumbing to confirm that the project would not lead to cross contamination of municipal supplies. Condition of Certification **SOIL&WATER-7** requires Watson to receive approval from the California Department of Public Health for a dual plumbing plan for the use of tertiary treated recycled water at the ~~BP Watson~~Watson Project site.

Title 22 addresses public health and use restrictions related to using tertiary treated recycled water at the ~~BP Watson~~Watson Project site. Title 22 is intended to address the potential for public health impacts related the use of recycled water potentially contaminated by pathogens within the project's cooling towers. The WBMWD currently produces and distributes tertiary treated recycled water processed at the Carson Regional Water Recycling Facility under an existing Water Recycling Requirements permit from the Los Angeles RWQCB (URS, 2009e). The WBMWD will need to update two Engineer's Reports to expand the Carson Regional Water Recycling Facility to provide additional recycled water for the ~~BP Watson project~~Watson Project, one for the Carson Regional Water Recycling Facility and one for the BP Carson Refinery (URS, 2009e). Both Engineer's Reports will need to be reviewed and approved by the California Department of Public Health and the Los Angeles RWQCB as part of the design process for the expansion of the Carson Regional Water Recycling Facility. Condition of Certification **SOIL&WATER-8** requires Watson to submit documentation of the approval from California Department of Public Health and the Los Angeles RWQCB for the Engineer's Reports covering the use of recycled water at the ~~BP Watson~~Watson Project site including an updated Water Recycling Requirements permit.

Provided that the ~~BP Watson project~~Watson Project adheres to the standards for the use of tertiary treated recycled water, Energy Commission staff believes that there will be no significant impacts related to the project's use of reclaimed wastewater.

Project Wastewater

The wastewater generated by the ~~BP Watson project~~Watson Project during operations would include both industrial wastewater and stormwater runoff from the fifth train power block area. The primary source of wastewater would be cooling tower blowdown. These wastewater streams would be directed to the BP Carson Refinery's oily water treatment system and ultimately discharged to Los Angeles County Sanitation District's wastewater treatment plant. Energy Commission staff evaluated the potential impact on the existing treatment system and reviewed the storage and treatment capacity of the existing system to handle the wastewater discharge from ~~BP Watson~~the Watson Project.

The ~~BP Watson project~~Watson Project would increase the wastewater flow rate from the existing Watson Cogeneration facility (not including stormwater) by approximately 90 gpm on average from approximately 0.81 mgd to 0.94 mgd. Maximum wastewater discharge would increase by about 139 gpm from approximately 1.21 mgd to 1.41 mgd (Watson, 2009a).

The estimated 100-year, 24 hour peak stormwater discharge to the BP Carson Refinery's oily water treatment system from the ~~BP Watson project~~Watson Project is approximately 9.1 cfs or 4,100 gpm. The total volume generated by the 100-year event is estimated to be 42,900 cubic feet or 320,840 gallons.

The discharge limits for the BP Carson Refinery are set forth in the industrial waste discharge permit for the BP Carson Refinery. The oily water system can discharge 5,081,000 gallons per day on average. The enforceable limits of the permit are set for wet weather discharges for two periods during the day. The enforceable limits are 5,210 gpm between 10 a.m. and 2 a.m. and 10,000 gpm for 2 a.m. to 10 a.m. The 10,000 gpm is the maximum rate that may be discharged and is measured as the highest average for a five minute period.

The BP Carson Refinery has provided a letter to the Watson Cogeneration facility acknowledging that the oily water treatment system has sufficient capacity to accept the waste stream (including stormwater runoff) from the ~~BP Watson project~~Watson Project while meeting its permitted discharge requirements (URS, 2010b). The oily water system currently processes approximately 4,000 gpm on average and peaks at 8,000 gpm (URS, 2009b).

Watson provided information regarding the available storage capacity of the existing tanks, basins, and a reservoir associated with the oily water treatment system. The total storage capacity available is approximately 207.5 million gallons. Currently two basins and a reservoir are empty with a combined storage capacity of 92 million gallons. It is anticipated that these storage facilities would be utilized in the event of a large runoff event to temporarily store additional runoff and allow the oily water treatment system to operate within the permitted limits. The estimated additional volume generated by the 100-year storm from the ~~BP Watson project~~Watson Project is approximately 520,840 gallons (URS, 2010a).

Energy Commission staff believes that there would be sufficient on-site storage and treatment capacity within the BP Carson Refinery's existing oily water treatment system to handle the industrial wastewater and stormwater generated by the proposed project. Additionally, Energy Commission staff believes that the by meeting the requirements of the existing industrial waste discharge requirements set forth for the BP Carson Refinery, the impact of the proposed project on existing wastewater treatment systems and water quality downstream of the site would be less than significant.

CUMULATIVE IMPACTS AND MITIGATION

Cumulative impacts consist of impacts that may occur as a result of the proposed project in combination with impacts from other past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time.

Surface Water / Stormwater

The ~~BP Watson~~Watson Project site is outside of the 100-year floodplain and stormwater runoff from the existing Watson Cogeneration facility would decrease as a result of the ~~BP Watson project~~Watson Project. In addition, the implementation of a water quality treatment BMP numerically sized to treat runoff from the existing Watson Cogeneration facility including the redeveloped portions that are part of the ~~BP Watson project~~Watson Project would improve water quality for stormwater discharged from the site. The ~~BP Watson project~~Watson Project is expected to decrease flood flows and improve water quality within the Dominguez Channel and no significant cumulative impacts to surface water resources are expected.

Groundwater

By replacing existing groundwater supply at the BP Carson Refinery with reclaimed water supply, groundwater pumping in the basin is not expected to increase significantly. This is expected to limit or maintain existing drawdown impacts in the vicinity of the ~~BP Watson~~Watson Project site and help to limit additional sea water intrusion into the aquifer below the ~~BP Watson~~Watson Project site. No significant cumulative impacts related to groundwater quantity or quality are anticipated as a result of the ~~BP Watson project~~Watson Project.

Project Water Supply

The use of the existing freshwater supplies at or below baseline rates for the most recent ~~three~~eleven-year period will prevent an increase in the demands on freshwater supplies in the project area including both surface water diversions from the Colorado River and State Water Project and groundwater pumped at the project site and at municipal wells in the Carson area. Provided that freshwater use does not increase above ~~4,219~~4,609 AFY no significant cumulative impacts related to water supply are expected as a result of the ~~BP Watson project~~Watson Project.

Project Wastewater

Wastewater including cooling tower blowdown and stormwater from the ~~BP Watson~~Watson Project would be routed to BP Carson Refinery's oily water treatment system and ultimately discharged to the Los Angeles County Sanitation District's wastewater treatment plant under an existing Industrial Wastewater Discharge Permit. While wastewater discharge would increase as a result of the ~~BP Watson project~~Watson Project, total discharge from the BP Carson Refinery's oily water treatment system would remain within the limitation set forth in the Refinery's Industrial Wastewater Discharge Permit. No significant cumulative impacts related to wastewater discharge are anticipated as a result of the ~~BP Watson project~~Watson Project.

PUBLIC AND AGENCY COMMENTS

Unnamed Public Comment – Data Response Workshop, October 14, 2009
During the October 2009 Data Response Workshop, a member of the public expressed concern about past water discharge violations at the existing Watson Cogeneration facility.

Energy Commission staff followed up with Watson in Data Requests 40 and 41 regarding any past violations for all water discharges (stormwater and wastewater) related to systems that the ~~BP Watson project~~Watson Project would utilize at the existing Watson Cogeneration facility or the BP Refinery (CEC, 2009ac). Watson responded by providing a detailed list of all violations related to the clean water system and oily-water system. Watson reported that there had been numerous NPDES permit exceedances for stormwater discharges between 2003 and 2008, although some of the noted exceedances were disputed (URS, 2010a). Additional stormwater related violations were administrative related to an inadequate SWPPP, missing sample analysis data, and late report filings (URS, 2010a). Related to industrial wastewater discharge, there was one substantive violation in April 2007 related to a leaking valve on Tank 95 (URS, 2010a).

Energy Commission staff reviewed the reported violations and stormwater discharge sample analysis results from the outfall at the existing Watson Cogeneration facility. Stormwater analysis results indicate that low levels of metals, PAHs, and coliforms have been detected in stormwater discharge from the existing facility. Energy Commission staff has required Watson to include water quality treatment BMPs for all stormwater streams that will be altered through the ~~BP Watson project~~Watson Project.

City of Carson – April 19, 2010

The City of Carson indicated that they would require a SUSMP including a water quality treatment BMP for the 0.7 acres of the ~~BP Watson~~Watson Project site that will discharge to the existing Watson Cogeneration facility's clean water system and stormwater outfall. The City also encouraged Watson to address water quality treatment for the entire existing Watson Cogeneration facility during the implementation of ~~BP Watson~~the Watson Project. The City noted that the RWQCB would adopt TMDLs for the Dominguez Channel within the next couple of years, and Watson would need to provide water quality treatment to meet TMDLs (CEC, 2010f).

In response, Energy Commission staff has required Watson to develop a SUSMP and implement a water quality treatment BMP covering all stormwater discharged from ~~BP Watson~~the Watson Project in Condition of Certification **SOIL&WATER-3**. In addition, Energy Commission staff is similarly encouraging Watson to address all stormwater runoff from the existing Watson Cogeneration facility with water quality treatment BMPs to provide a comprehensive stormwater treatment plan for the site to address the upcoming TMDLs.

COMPLIANCE WITH LORS

Energy Commission staff reviewed the proposed project to determine if the project would adhere to the requirements of LORS and state and local policies related to soils and water resources.

Water Supply

Of particular concern to Energy Commission staff was ~~BP Watson~~the Watson Project's proposed water supply and determination that the proposed water supply met state laws

and policies. Under the California Constitution (Section 2, Article X), California Water Code encourages the conservation of water resources and the maximum reuse of wastewater particularly in areas of limited supply. The Water Code (Sections 13550 and 13552.6) indicates that use of potable water for industrial uses including power plant cooling is a waste and unreasonable use of water if sources of recycled water are available. Water Code Section 13550 includes conditions for the requirement to utilize recycled water:

1. Source of the water is of adequate quality and available. Also, the state shall consider the impact of the use of recycled water on the quality of wastewater discharge.

2. Recycled water may be furnished at a reasonable cost. The state shall consider whether the present and projected cost of the use of recycled water is comparable to or less than the cost of potable, domestic water.

3. The use of recycled water would not be detrimental to public health.

4. The use of recycled water shall not impact downstream water rights.

SWRCB Resolutions 75-58 and 2009-0011 support and promote the use of recycled water and encourage the substitution of recycled water for potable sources to the extent possible. The SWRCB indicates that the lowest quality cooling water reasonably available from technical and economic standpoint should be utilized for industrial processes including evaporative cooling processes. The Energy Commission in its 2003 IEPR adopted a policy pursuant to SWCRB Resolution 75-58, indicating that approval of fresh water sources for power plant cooling would only be acceptable if alternative water supply sources are economically unsound or environmentally undesirable. The 2003 IEPR also requires the use of Zero Liquid Discharge technologies to limit waste water discharge from power plants unless it is shown to be economically unsound or environmentally undesirable. The Energy Commission has indicated that it interprets the term “economically unsound” to be equivalent to economically infeasible.

~~BP~~ Watson has proposed the use of potable water supplied by California Water Services Company and groundwater pumped from onsite wells under a combined ~~BP Watson~~Watson Project and Watson Cogeneration cap. The WBMWD indicates that they can implement an expansion project to provide about 2,100 AFY of additional reclaimed water to the BP Carson Refinery to supply the ~~BP Watson project~~Watson Project within 24 to 30 months of receiving a fully executed agreement. This reclaimed water supply would meet the four primary tests included in the California Water Code requiring the use of reclaimed water:

1. As discussed under Water Supply, the reclaimed water supplied by the WBMWD would be of much higher quality than the currently utilized blend of municipal and groundwater supplies. Tertiary treatment followed by micro-filtration and either nitrification or reverse osmosis would result in reclaimed water with superior water quality as compared to Watson Cogeneration’s existing freshwater supplies.

2. The reclaimed water supplied by WBMWD would be comparable in cost to that of freshwater utilized by Watson when factoring the costs of treatment. The analysis

under Water Supply, indicates that the implementation of additional micro-filtration capacity at the Carson Regional Water Recycling Facility would provide both reverse osmosis and nitrified reclaimed water at costs that are comparable to Watson Cogeneration's existing freshwater supply. The additional micro-filtration capacity would provide about 2,100 AFY of new reclaimed water which is more than adequate to meet the 1,718 AFY water supply required for ~~BP Watson~~the Watson Project.

3. Implementation of the requirements of Conditions of Certification **SOIL&WATER-7** and **SOIL&WATER-8,** would ensure that the use of reclaimed water would not be detrimental to public health. Condition of Certification **SOIL&WATER-7** requires the project owner to prepare, implement and adhere to a dual plumbing plan approved by the California Department of Public Health to prevent the cross-contamination of potable water supply with reclaimed wastewaters. Condition of Certification **SOIL&WATER-8** requires the project owner to submit WBMWD's updated Engineer's Report for the distribution and use of reclaimed water supplies at ~~BP Watson~~the Watson Project. The Engineer's Report would be reviewed and approved by the Los Angeles RWQCB and California Department of Public Health to ensure that the use of reclaimed water at ~~BP Watson~~the Watson Project would not result in any impacts or risk to public health.

4. Finally, use of reclaimed water would not impact downstream water rights, as all wastewater from the West Coast Basin is discharged directly to the Pacific Ocean. The ~~BP Watson project~~Watson Project's proximity to the Pacific Ocean makes it an ideal location for the use of reclaimed water. As compared to other facilities further inland, wastewater in the Carson area is discharged directly to the Pacific Ocean. This allows for brine wastewater generated from reclaimed water treatment to be efficiently discharged to the ocean without negatively impacting freshwater supplies for downstream users. Also, since Carson is adjacent to the ocean, there are no users with water rights to the receiving waters or wastewater from the project vicinity.

Thus, the reclaimed water supply proposed by the WBMWD meets all of the requirements of CA Water Code 13550. ~~Use of potable water and groundwater by BP Watson without implementing the reclaimed water supply proposed by the WBMWD, would be a waste and unreasonable of water under State Law and the California Constitution.~~ Therefore, Energy Commission staff included a requirement for the ~~BP Watson~~Watson Project and Watson Cogeneration combined utilize reclaimed water for any water use above the cap in Condition of Certification **SOIL&WATER-5.**

The ~~BP Watson project~~Watson Project would comply with all applicable LORS associated with soil and water resources, including:

- The Clean Water Act through the authority granted to the State to enforce coverage under the NPDES by the Los Angeles Regional Water Quality Control Board through the requirements for the preparation and implementation of the SWPPPs, Drainage Erosion and Sedimentation Control Plan, and Standard Urban Stormwater Mitigation Plan as required in Conditions of Certification **SOIL&WATER-1**, **-2**, and **-3**;

- The Resource Conservation Recovery Act of 1976 by the proper handling and discharge of wastewater and potentially contaminated soils;
- The Porter-Cologne Water Quality Control Act by the use of reclaimed water and through the implementation of the DESCP and SWPPP;
- The California Safe Drinking Water and Toxic Enforcement Act by establishing secondary containment in chemical storage areas;
- The California Constitution, Article X, Section 2 by using reclaimed water for plant process water within three years of construction as required in Condition of Certification **SOIL&WATER-5**;
- California Water Code 13550 by using reclaimed water for plant process and cooling uses to the extent feasible as required in Condition of Certification **SOIL&WATER-5**;
- The Water Recycling Act by using reclaimed water for plant process and cooling uses as required in Condition of Certification **SOIL&WATER-5**;
- The Energy Commission's 2003 Integrated Energy Policy Report, and SWRCB Resolutions 75-58, by using reclaimed wastewater for power plant cooling and process water demands to the extent feasible as required in Condition of Certification **SOIL&WATER-5**;
- Title 17 of the California Code of Regulations by ensuring that the California Department of Public Health confirms the requirements of backflow prevention and cross connections of potable and non-potable lines;
- Title 22 of the California Code of Regulations by ensuring that the California Department of Public Health and Los Angeles Regional Water Quality Control Board review and approve the wastewater treatment system to ensure that the proposed systems meet tertiary treatment standards for the protection of public health;
- Title 23 of the California Code of Regulations requiring the Regional Board to specify conditions for protection of water quality as applicable: In the case of the ~~BP Watson project~~Watson Project, the project would be permitted under the General NPDES Permits for Discharge of Stormwater associated with both construction and industrial activity.

CONCLUSIONS

In the Socioeconomics section of this staff assessment, staff presents census information that shows that there are minority populations within six miles of the project. For the proposed ~~BP Watson project~~Watson Project, the total population within the six-mile radius of the site is 778,090 persons, and the total minority population is 646,789 persons or 83.12 percent of the total population (see Socioeconomics Figure 1). Energy Commission staff has identified significant adverse direct or cumulative soil and water impacts resulting from the construction or operation of the proposed project; however, mitigation measures to reduce these impacts have been developed.

Staff concludes that the ~~BP Watson Project~~Watson Project would not result in significant soil and water impacts from construction or operation of the power plant on minority

population if the proposed Conditions of Certification are implemented. Therefore, there are no environmental justice issues for soil and water.

The California Energy Commission (Energy Commission) staff has not identified any immitigable potentially significant impacts to Soil and Water Resources for Watson Cogeneration Steam and Electric Reliability Project (~~BP Watson~~Watson Project) and believes that the Watson project would comply with all applicable Laws, Ordinances, Regulations and Standards (LORS) provided the proposed conditions of certification are implemented.

Energy Commission staff concludes the following:

- Implementation of Best Management Practices during the ~~BP Watson project~~Watson Project construction and operation in accordance with effective Storm Water Pollution Prevention Plans, a Drainage Erosion and Sediment Control Plan, and Standard Urban Stormwater Management Plan would avoid significant adverse effects that could otherwise result in significant transport of sediments or contaminants from the site by wind or water erosion.
- Capping combined freshwater use at rates at or below ~~4,219~~4,609 AFY for both ~~BP Watson~~the Watson Project and the existing Watson Cogeneration Steam and Electrical Generating facility (Watson Cogeneration) would result in no net increase of combined pumped groundwater and purchased municipal freshwater use associated with the ~~BP Watson Project~~Watson Project.
- The combined cap over freshwater use at ~~BP Watson~~the Watson Project and Watson Cogeneration is based on recent freshwater use at Watson Cogeneration, with the ~~three~~ eleven most recent years (~~2008~~ 2000 – 2010) being the most representative of baseline conditions in the water basin.
- Any water use at the combined ~~BP Watson~~Watson Project and Watson Cogeneration projects above the capped ~~4,219~~4,609 AFY shall be reclaimed water from a local waste water treatment facility~~, and shall be a supply above and beyond reclaimed water already being supplied to either Watson Cogeneration or the BP Refinery~~. Staff finds that the use of reclaimed water associated with the ~~BP Watson project~~Watson Project is consistent with Energy Commission Policy and the California Water Code.
- Water that augments c~~C~~ondensate return to ~~BP Watson~~the Watson Project from Watson Cogeneration or the BP Refinery shall be metered~~from steam supplied from BP Watson or Watson Cogeneration, and shall not be augmented with additional freshwater at Watson Cogeneration or the BP Carson Refinery~~.
- The project would not be located within the 100-year flood plain, and would not increase flood conditions downstream of the project.
- The discharge of wastewater under the conditions stipulated in the BP Carson Refinery's Industrial Wastewater Discharge Permit would meet Los Angeles County Sanitation District's wastewater standards.
- At the Preliminary Staff Assessment Workshop in January 2011, the LARWQCB presented data that indicates that there is up to 14 feet of floating non-aqueous phase hydrocarbons on the groundwater surface at the project site and indicated

that there may be a source area at the project site. These site conditions and potential impacts are addressed in the Waste Management section of this analysis.

Where the potential for impacts has been identified, staff is proposing mitigation measures to reduce the impact to less than significant. The mitigation measures, as well as specifications for LORS conformance, are included as conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

SOIL&WATER-1: Prior to site mobilization, the project owner shall obtain CPM approval for a site-specific Drainage, Erosion and Sedimentation Control Plan (DESCP) that ensures protection of water quality and soil resources of the project site for both the construction and operational phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, meet local requirements (including MS4 Permit requirements), and identify all monitoring and maintenance activities. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1** and may incorporate by reference any SWPPP developed in conjunction with any NPDES permit.

The DESCP shall contain elements 1 through 9 below outlining site management activities and erosion- and sediment-control BMPs to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.

1. **Vicinity Map** – A map(s) at a minimum scale 1”=100’ shall be provided indicating the location of all project elements (construction site, laydown area, pipelines) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

2. **Site Delineation** – All areas subject to soil disturbance for the ~~BP Watson project~~Watson Project (project site, laydown and parking area, , and any other project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

3. **Watercourses and Critical Areas** – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. It shall indicate the proximity of those features to the ~~BP Watson~~Watson Project site construction, laydown and parking areas.

4. **Drainage Map** – The DESCP shall provide a topographic site map(s) at a minimum scale of 1”=100’ showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet.

5. **Narrative of Project Site Drainage** – The DESCP shall include a narrative of the drainage measures necessary to protect the site and potentially affected soil and water resources within the drainage downstream of the site. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage features. The hydraulic analysis shall be used to support the selection of BMPs and

structural controls to divert off-site and on-site drainage around or through the ~~BP Watson~~Watson Project site and laydown areas.

6. **Clearing and Grading Plans** – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.

7. **Clearing and Grading Narrative** – The DESCP shall include a table with the quantities of material excavated or filled for the site and all project elements (project site, laydown area, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

8. **Best Management Practices Plan** – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). The DESCP shall identify an appropriate water quality treatment BMP to target sediment, metals, hydrocarbons, and PAHs numerically sized to meet the requirements of the LARWQCB.

9. **Best Management Practices Narrative** – The DESCP shall show the location (as identified in 8 above), timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during all project element (site, pipelines) excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information will be available.

Verification: No later than 90 days prior to start of site mobilization, the project owner shall submit a copy of the DESCP for construction activity and operations to the City of Carson and the Los Angeles Regional Water Quality Control Board (LA RWQCB) for review and comment. No later than 60 days prior to start of site mobilization, the project owner shall submit the DESCP with the City's and LA RWQCB's comments to the CPM for review and approval. The CPM shall consider comments by the City and LA RWQCB before approval of the DESCP. The DESCP shall be consistent with the grading and drainage plan as required by condition of certification **CIVIL-1**, and relevant portions of the DESCP shall clearly show approval by the chief building official. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage, erosion and sediment control measures and the results of monitoring and maintenance activities. Once operational, the project owner shall provide in the annual compliance report information on the results of monitoring and maintenance activities.

SOIL&WATER-2: The project owner shall comply with the requirements of the general National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activity. The project owner shall develop and implement a construction stormwater pollution prevention plan (construction SWPPP) for the construction of the ~~BP Watson~~Watson Project site, laydown area, and all linear facilities.

Verification: The project owner shall submit to the compliance project manager (CPM) a copy of the construction SWPPP prior to site mobilization and retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the Los Angeles Regional Water Quality Control Board regarding the NPDES permit for the discharge of stormwater associated with construction activity within 10 days of its receipt or submittal. Copies of correspondence shall include the notice of intent sent to the State Water Resources Control Board, and the board's confirmation letter indicating receipt and acceptance of the notice of intent.

SOIL&WATER-3: The project owner shall submit to the CPM a copy of the Standard Urban Stormwater Mitigation Plan (SUSMP) as required under Los Angeles County's Municipal Stormwater NPDES Permit (MS4 Permit) prior to commencement of construction of the ~~BP Watson project~~Watson Project. The SUSMP shall identify and implement an appropriate water quality treatment Best Management Practice targeted to the pollutants of concern at the site and receiving water and sized according the numerical sizing guidelines included in the MS4 Permit.

Verification: The project owner shall submit to the compliance project manager (CPM) a copy of SUSMP prior to site mobilization. The project owner shall submit copies to the CPM of all correspondence between the project owner, the Los Angeles Regional Water Quality Control Board, and the City of Carson regarding the SUSMP for the discharge of stormwater from the Watson Cogeneration facility within 10 days of its receipt or submittal. Copies of correspondence shall include all comments on the SUSMP. The project owner shall revise the SUSMP to address all comments from the Los Angeles Regional Water Quality Control Board and the City of Carson and submit the final SUSMP for approval by the CPM prior to operation.

SOIL&WATER-4: The project owner shall comply with the requirements of the general NPDES permit for discharges of stormwater associated with industrial activity. The project owner shall develop and implement an industrial stormwater pollution prevention plan for the operation of the ~~BP Watson project~~Watson Project.

Verification: The project owner shall submit to the CPM a copy of the industrial SWPPP for operation of the ~~BP Watson project~~Watson Project prior to commercial operation, and shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the LA RWQCB regarding the general NPDES permit for discharge of stormwater associated with industrial activity within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the State Water Resources Control Board.

SOIL&WATER-5: Total use of raw freshwater by ~~BP Watson~~the Watson Project and the Watson Cogeneration Project (all five trains), including raw groundwater

pumped from wells at the BP Carson Refinery and raw potable water supplied by the California Water Services Company, shall not exceed ~~4,219~~4,609 acre-feet per year (AFY) for the life of the project. All water used above the cap of ~~4,219~~4,609 AFY shall be reclaimed water.

Prior to commercial operation of ~~BP Watson~~the Watson Project, the project owner shall install and maintain metering devices as part of the project water supply and distribution system, to monitor and record in gallons per month the total volumes of water supplied to the project from each water source (nitrified reclaimed water, reverse osmosis reclaimed water, raw municipal water, and raw groundwater). The metering devices shall be operational for the life of the project.

The project owner shall prepare an Annual Water Use Summary, which will include the monthly range and monthly average of daily non-potable water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre feet. Potable water use on-site shall be recorded on a monthly basis. For subsequent years, the Annual Water Use Summary shall also include the yearly range and yearly average water use by the project. The annual summary shall be submitted to the CPM as part of the annual compliance report.

~~Prior to commencing operation of BP Watson (the fifth train), the project owner shall submit a fully executed agreement between either the project owner or the BP Carson Refinery and the reclaimed water purveyor West Basin Municipal Water District or its successor to provide new reclaimed water, above and beyond that already being supplied to either Watson Cogeneration or the BP Refinery.~~ Prior to using water in excess of the cap, the new reclaimed water supply must be online and plumbed to supply ~~BP Watson~~the Watson Project and the Watson Cogeneration Project (all five trains).

Verification: ~~At least 30 days prior to commencing operation, the project owner shall submit documentation to the CPM of a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project.~~ At least 30 days prior to commercial operation of ~~BP Watson~~the Watson Project, the project owner shall submit documentation to the CPM that metering devices for the project have been installed on each water source (raw municipal water and raw groundwater).

At least 30 days prior to the project owner using water in excess of the cap, the project owner shall submit documentation to the CPM indicating that the new reclaimed water supply project is completed and plumbed to deliver reclaimed water to the Watson Cogeneration Project/~~BP Watson Project~~Watson Project. If prior to the project owner using water in excess of the cap, the project owner demonstrates to the CPM's satisfaction that reclaimed water is not available or is not available at a reasonable cost, then the CPM may adjust the freshwater cap on a temporary or permanent basis. At least 30 days prior to delivery of reclaimed water, the project owner shall submit documentation to the CPM that metering devices have been installed on each source or reclaimed water (nitrified reclaimed water and single-pass reverse osmosis reclaimed water).

The project owner shall submit the Water Use Summary to the CPM in the annual compliance report. The summary report shall distinguish between recorded water use of nitrified reclaimed water, reverse osmosis reclaimed water, municipal water, and groundwater. ~~Included in the summary report of water use, the project owner shall submit copies of meter records from the West Basin Municipal Water District documenting the quantities of tertiary treated recycled water provided (in gallons per day) by the West Basin Carson Regional Facility.~~ The project owner shall provide a report on the annual servicing, testing, and calibration of the metering devices.

SOIL&WATER-6: Prior to commercial operation, the project owner shall install and maintain metering devices as part of the project water supply and distribution system, to monitor and record in gallons per month the total volumes of process water supplied to the Fifth Train (Lines C and D - AFC Figure 5.5-1, Water Balance Flow Diagram) and volumes of water supplied by the Fifth Train to Watson Cogeneration Company's steam header and high pressure water system (Lines J and M - AFC Figure 5.5-1, Water Balance Flow Diagram). The metering devices shall be operational for the life of the project. The project owner shall attempt in good faith to ensure that no less than 95 percent of the total volume of process water supplied to the Fifth Train shall be delivered to the Watson Cogeneration Company's steam header and/or high-pressure water system on an annual basis. This percentage is a voluntary, non-binding goal and the project owner shall not be deemed out-of-compliance with this condition for failure to achieve this percentage, provided the project owner: 1) installs and maintains the metering devices described above; 2) attempts in good faith to achieve the non-binding percentage goal described above; and 3) provides the information set forth in the verification below.

Verification: At least 30 days prior to commercial operation of the project, the project owner shall submit documentation to the California Energy Commission (Energy Commission) Compliance Project Manager (CPM) that metering devices for the project have been installed on lines C, D, J, and M (AFC Figure 5.5-1, Water Balance Flow Diagram) and are operational. The project owner shall prepare an annual water usage summary giving the monthly total and annual total of water delivered to the Fifth Train via lines C and D, and from the Fifth Train to the Watson Cogeneration Company's steam header and/or high-pressure water system. The summary shall also state the annual percentage of the volume of water supplied to the Fifth Train that is delivered to the Watson Cogeneration Company's steam header and/or high-pressure water system. The percentage shall be computed as (J+M)/(C+D). The annual summary shall be included in the Annual Compliance Report. To the extent that the reported percentage for any year falls below the 95 percent goal, the project owner shall include a detailed discussion of the reasons for failing to achieve the goal and any steps that it has taken or intends to take to improve the percentage over the next year.

SOIL&WATER-7: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner shall submit a Dual Plumbing Plan for utilizing disinfected tertiary treated recycled water for plant process and cooling uses to the California Department of Public Health for

review and comment and to the Chief Building Official (CBO) for review and approval. The Dual Plumbing Plan shall be prepared in accordance with Title 17 of the State Water Code. This plan may be consolidated with the Engineer's Report for the Production, Distribution and Use of Recycled Water as specified in **SOIL&WATER-8**. The project owner shall comply with any reporting and inspection requirements set forth by the California Department of Public Health to fulfill statutory requirements.

Verification: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner shall submit the Dual Plumbing Plan to the California Department of Public Health and the CBO. The project owner shall submit copies to the CPM of all correspondence between the project owner and the California Department of Public Health related to the Dual Plumbing Plan within 10 days of its receipt or submittal. Copies of correspondence shall include the California Department of Public Health approval of the Dual Plumbing Plan.

SOIL&WATER-8: The project owner shall submit an Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project to the California Department of Public Health and Los Angeles Regional Water Quality Control Board for review and approval. The Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project shall be prepared in accordance with Titles 17 and 22 of the California Code of Regulations, the Health and Safety Code, and the Water Code. The project shall comply with any reporting and inspection requirements set forth by the California Department of Public Health and Los Angeles Regional Water Quality Control Board.

Verification: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner (in conjunction with West Basin Municipal Water District) shall submit an updated Water Recycling Requirements permit from the Los Angeles Regional Water Quality Control Board and approval of the Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project from the California Department of Public Health to the CPM. The project owner shall submit copies to the CPM of all correspondence between the project owner and the California Department of Public Health and/or the Los Angeles Regional Water Quality Control Board related to the Water Recycling Requirements permit or the Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project within 10 days of its receipt or submittal.

SOIL&WATER-9: Water added to the c~~C~~ondensate return to ~~BP Watson~~the Watson Project from Watson Cogeneration or the BP Refinery shall be metered~~from steam supplied from BP Watson or Watson Cogeneration, and shall not be augmented with additional water at Watson Cogeneration or the BP Carson Refinery~~.

Verification: The project owner shall include the recorded use of water added to the condensate return in ~~submit~~ the Water Use Summary that will be prepared and submitted to the CPM per **SOIL&WATER-5**.~~to the CPM in the annual compliance report. The summary report shall distinguish between recorded water use of nitrified reclaimed water, reverse osmosis reclaimed water, municipal water, condensate return, and groundwater. Included in the summary report of water use, the project owner shall submit copies of meter records from the West Basin Municipal Water District documenting the quantities of tertiary treated recycled water provided (in gallons per day) by the West Basin Carson Regional Facility.~~ The project owner shall provide a report on the annual servicing, testing, and calibration of the metering device~~s~~.

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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *WATSON COGENERATION STEAM AND ELECTRICITY RELIABILITY PROJECT*

DOCKET NO. 09-AFC-1
PROOF OF SERVICE LIST
(Revised 5/4/11)

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*indicates change

DECLARATION OF SERVICE

I, Cindy Kyle-Fischer, declare that on September 22, 2011, I served and filed copies of the attached *Comments on the Final Staff Assessment, dated September 2011*. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.gov/sitingcases/watson].

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

__X__ sent electronically to all email addresses on the Proof of Service list;

____ by personal delivery;

__X__ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__X__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-1
1516 Ninth Street, MS-4
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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Cindy Kyle-Fischer