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LATHAM & WATKINS LLP

November 18, 2015

Mr. Chris Williamson
Principal Planner
City of Oxnard, Planning Division
214 South C Street,
Oxnard, California 93030

Re: Opposition to Proposed Zoning Amendments Targeted at NRG's Coastal Power Plants

Dear Mr. Williamson:

With neither adequate public notice nor direction from the California Coastal Commission (CCC), the City of Oxnard (City) has proposed several amendments to its Local Coastal Plan (LCP) and zoning ordinance targeted at the Ormond Beach Generating Station (OBGS) and Mandalay Generating Station (MGS) sites "that, collectively, require consolidation of new power plants at one location" outside of the Coastal Zone (Proposed Amendments).[1] The obvious underlying purpose of the Proposed Amendments is to impede NRG Energy, Inc. and its affiliates (NRG) from processing the pending Application for Certification before the California Energy Commission (CEC) for the Puente Power Project (P3) by attempting to create an apparent land use and Coastal Act inconsistency.

The Proposed Amendments amount to an unlawful targeted attack against NRG instead of a proper land use planning process. At a minimum, the Proposed Amendments ***contravene***:

- The Coastal Act;
- The terms of the CCC's LCP update grant to the City;

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1 Planning Commission Staff Report from Chris Williamson to the Planning Commission re: *Planning and Zoning (PZ) Permit Nos. 15-410-01 (Local Coastal Plan Amendment), PZ 15-580-02 (Coastal Zone Text Amendment), PZ 15-570-06 (Zone Change) for Properties Located at 251 and 393 North Harbor Boulevard, and PZ 15-570-07 (Zone Change) for Properties Located at 6635 Edison Drive*, dated November 19, 2015 (Staff Report).

- The City's own Municipal Code and General Plan;
- The California Environmental Quality Act (CEQA);
- State planning law; and
- The state and federal Constitution.

Rather than rushing forward with this unlawful and ill-advised proposal, the City should focus on the comprehensive LCP update as it committed to doing with the CCC, and should honor NRG's repeated requests to engage in meaningful discussions to ensure that if the CEC approves P3 it will be developed in a manner that provides maximum benefits to the City and its residents. As it has been from the outset, NRG remains committed to working with the City in a cooperative fashion if given the opportunity to do so. However, if the City continues to reject NRG's offers of cooperation, and instead devotes its time and resources to collateral attacks on P3 such as the Proposed Amendments (which are ultimately subject to the CEC's override authority in any event), NRG will have no choice but to respond accordingly.

Following are NRG's initial comments on the Proposed Amendments. Given the very short and inadequate notice provided to NRG by the City, these comments were prepared in a compressed time frame. NRG reserves the right to submit additional comments and evidence if the City proceeds with the Proposed Amendments.

I. THE CITY FAILED TO FOLLOW PROCEDURAL REQUIREMENTS

A. Proper Notice Was Not Given

The City failed to satisfy the Coastal Act and its own Municipal Code notice requirements for the scheduled Planning Commission hearing on November 19, 2015. This failure violates the basic due process rights of the owners of the affected properties, including NRG. Improper notice materially prejudices affected parties by not allowing sufficient time to understand and respond to this ill-conceived proposal.

NRG's first notice of the November 19 proceeding and the Proposed Amendments came from an email sent by Chris Williamson, City Planning Division, on November 5 with a subject line that read: "City of Oxnard - Rezoning of Ormond, Mandalay, and McGrath peaker plant areas scheduled for Nov 17 Planning." The subject line confusingly lists the wrong hearing date and the attached notice provided only a generic description of the proposed action. NRG's response email expressed strong concern about the lack of information, including insufficient notice of the nature and scope of the Proposed Amendments.[2]

The City only sent additional detail by email on November 10, including an incomplete version of the Staff Report, ***a mere nine days before the Planning Commission hearing***. The November 10 email acknowledged the information was not complete (although there was some

[2] See Exhibit 1.

confusion on the part of staff as to which parts were missing) and that additional materials would not be sent until later in the week.[3] It was not until November 16, in response to a follow-up request from NRG, that staff sent NRG a complete copy of the Staff Report.[4]

The Staff Report does not provide evidence of when notice mailings were sent, who received mailings, or when the posting occurred. The Staff Report is dated November 19, the date of the hearing, so it provides no evidence of an earlier notice.

1. The City Did Not Satisfy Coastal Act Notice Requirements

The Coastal Act includes very specific notice requirements that were not met. Coastal Act Regulations section 13515(c) requires that a local government notify the public of an upcoming ***LCP amendment process and availability of review drafts at least 6 weeks before a vote***. Coastal Act Regulations section 13515(d) requires that notice of the local government's hearings on LCP documents shall be transmitted to all interested persons not less than ten working days before the hearing. It is also the policy of the Coastal Act to "provid[e] maximum opportunities for the participation of the public . . . in the preparation of the LCP." *See* Coastal Act § 30503; Coastal Act Regulations § 13515.

Here, while Mr. Williamson's brief email was sent on November 5, NRG was not given any substantive information about the Proposed Amendments until Mr. Williamson emailed the draft Staff Report on November 10, ***only nine calendar days*** before the Planning Commission hearing. This very limited notice clearly violates Coastal Act Regulations section 13515(c) (six weeks' notice). It also violates Coastal Act section 30503 and Coastal Act Regulations section 13515 (maximum opportunities for public participation) because NRG cannot meaningfully participate in the proceeding with such truncated notice and limited information. It is also inconsistent with the spirit of Coastal Act Regulations section 13515(d) because meaningful notice was not provided until nine days before the hearing.

The City's lack of notice and public engagement is particularly egregious with respect to its broad revisions to Municipal Code Section 17-22 (the RC subzone) which affect large portions of the Oxnard coastal zone. The City's attempt to short-circuit the appropriate planning process and do away with the Energy Coastal subzone entirely by rezoning NRG's and Southern California Edison's (SCE) properties as RC has the consequence of rezoning much of Oxnard's coastal zone, including several parks and recreation areas. The City has evidently deemed those areas appropriate for development of energy storage facilities, solar power generation facilities, electric substations, and electric transmission facilities, but has conducted no public outreach, nor any public participation to consider the impacts and implications of those revisions. That the City has ignored the consequences of its proposed actions makes clear that it is driven solely by tunnel vision focused on negatively impacting NRG's property without regard to the public process.

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[3] See Exhibit 2.

[4] See Exhibit 3.

2. The City Did Not Follow Its Own Public Notice Requirements

Oxnard Municipal Code section 17-57(A)(8) establishes the procedures for "Coastal land use plan, zoning map and text amendments." Further, Oxnard Municipal Code section 17-57(A)(8) requires that "[a]mendments to the certified coastal land use plan may be initiated only in the following manner…(i) A resolution of intention of the commission; (ii) A resolution of intention of the city council."

Here, there is no evidence that the Proposed Amendments were initiated by resolution of the Planning Commission or City Council. The City cannot rely on the initiation of the comprehensive LCP update. As explained below, the Proposed Amendments are outside the scope of the comprehensive LCP update.

According to Oxnard Municipal Code section 17-57(C)(5)(a), "Notice of each public hearing shall be given at least ten days prior to each hearing in the same manner as prescribed for coastal development permits…" Oxnard Municipal Code section 17-58(c)(3) requires, "At least ten days prior to decision on the applications for development review permits or administrative modifications, the director shall provide notice of the pending development review by first class mail addressed to all persons who have requested to be on the mailing list for that development project or for coastal decisions within the city's jurisdiction, and to all property owners within 300 feet of the perimeter of the parcel on which the development is proposed and to the coastal commission."

Here, it appears the City failed to follow its own procedural requirements. NRG did not receive any substantive information about the Proposed Amendments until less than ten days before the scheduled hearing. Also, there is no other evidence that other affected property owners or interested parties were provided proper notice. At a minimum, notice should have been mailed to:

- The owner of the property identified in the proposed change to LCP Policy 62;
- Surrounding owners of the property identified in the proposed change to LCP Policy 62;
- Any individual or community groups that requested notice of coastal land use decisions;
- Every property owner with lands zoned as Coastal Recreation (RC),[5] and surrounding properties, because the Proposed Amendments change the conditionally permitted uses allowed in RC zones. Because the Proposed Amendments materially change the uses conditionally allowed in the RC zone, every owner of RC-zoned lands is affected by this proposal, as well as any surrounding owners that could be impacted by the new conditionally permitted uses.

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[5] Oxnard Municipal Code § 17-22.

In addition, because the property affected by the Policy 62 amendment is not within the Coastal Zone, the Zoning Code requirements applicable to non-coastal properties must be followed, which does not appear to have been done here.

B. The City Misled NRG and the Public on Plans for LCP Update

NRG is extremely concerned by the lack of public notice and opportunity for participation, given the sweeping zoning changes proposed in the notice. The zoning amendments have profound implications on NRG's current and future activities at both properties, but the City has made no effort to seek NRG's input as the primary landowner impacted by the Proposed Amendments. The lack of notice and information flies in the face of the Coastal Act's explicit admonition to local governments to maximize public participation in the preparation of LCPs.

II. GENERAL PLAN AMENDMENTS ARE REQUIRED BEFORE THE CITY CAN REZONE THE AFFECTED PROPERTIES AND REDEFINE THE PLANNING RESERVE DESIGNATION

A. The Proposed Amendments Are Inconsistent with the General Plan Map

Under California law, every city must adopt a General Plan as the "constitution" for that jurisdiction's physical development. Cal. Gov. Code § 65300. The general rule is that decisions by cities affecting land use and development must be consistent with the General Plan. *See Friends of Lagoon Valley v. City of Vacaville*, 154 Cal. App. 4th 807, 815 (2007).

General Plan policy CD 21.4 requires: "When the LCP is being updated, change land use designations within the Coastal Zone to those included in the 2030 General Plan Land Use Map, if and as amended." Here, the Proposed Amendments directly conflict with this policy and the General Plan Map.

The General Plan Map has a designation of Public Utility/Energy Facility (PUE) for the MGS and OBGS sites. The PUE designation "[a]pplies to large electrical generating and transmission facilities. Due to the uniqueness of these types of facilities, the development intensity is established on an individual basis."[6] General Plan, Table 3.2, identifies the corresponding Zoning Designation as M-2, which applies to heavy industrial facilities.

The Proposed Amendments would change the zoning designation from Energy Coastal (EC) to Coastal Recreation (RC). The EC zoning code is consistent with the PUE designation, providing areas for siting, construction, modification, and maintenance of power generating facilities with electrical substations.[7] In contrast, RC is designed "to provide open space for various forms of outdoor recreation of either a public or private nature. The intent is to

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6 General Plan at p. 3-16.

7 Oxnard Municipal Code § 17-20.

encourage outdoor recreational uses which will protect and enhance areas which have both active and passive recreation potential."[8]

The RC zone applies to recreational, open-space areas while the PUE designation applies to large electrical generating and transmission facilities. Nothing about the RC zone is consistent with the PUE designation.

B. General Plan Definition of the Planning Reserve Designation Does Not Cover Power Plants

The Staff Report states that the staff "considers the Planning Reserve land use designation as allowing a power plant, subject to detailed site plan and environmental review under the purview of the CEC AFC siting process."[9] This conclusion is wrong.

The General Plan, section 3.5, page 3-17 describes the "Planning Reserve" designation as:

> Areas considered likely to urbanize during the planning period, subject to additional environmental evaluation and the provision of adequate public infrastructure and services. This land use designation would be changed during a subsequent planning process.

While broad, this definition is not unlimited and certainly does not cover power plants. The Planning Reserve designation contemplates that future uses will "urbanize," implicating an influx of residential or commercial uses. Additional clarity is provided in General Plan, Table 3.2, which identifies the corresponding zoning codes that are associated with a particular designation. Table 3.2 states the corresponding zoning designation for Planning Reserve is "R-P." This appears to be an error because the Zoning Code does not include an R-P zone. In any instance, the General Plan does ***not*** identify M-2 (Heavy Industrial) as being consistent with the Planning Reserve designation, and M-2 is the only zone that supports a large power plant.

By contrast, Table 3.2 identifies M-2 as the only zone associated with the current General Plan designation for the MGS and OBGS sites (PUE), demonstrating that the City is well aware of which zone corresponds to siting power plants. By not identifying M-2 or another industrial zone with the Planning Reserve designation, the General Plan cannot be reasonably interpreted as authorizing power plants in a Planning Reserve area. Therefore, the Proposed Amendments would obligate a change to the Planning Reserve definition.

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8 Oxnard Municipal Code § 17-22(A)(1).

9 Staff Report at p. 9.

C. The Proposed Amendments Are Inconsistent with Many General Plan Policies

The Staff Report determines that the Proposed Amendments are consistent with the General Plan based on an overly narrow and skewed analysis. A balanced review of the General Plan reveals a number of prohibited internal inconsistencies with the Proposed Amendments, which state law prohibits.

Four years ago, the City proposed to amend the General Plan to change the land use designation for the NRG sites from PUE to Resource Protection, but the City recognized that it had not prepared the requisite CEQA analysis for such a significant General Plan revision and did not adopt the change in land use designation. Accordingly, the land use designation in the current General Plan for NRG's and SCE's sites remains PUE.

Similarly, here, the City cannot move forward with the Proposed Amendments without revising the General Plan, which requires the City to satisfy CEQA and its own Municipal Code requirements. The Staff Report attempts to assume these conflicts away by pointing to LCP Policy 2, which states, "[i]f there are any conflicts between the policies or land use designations of the Coastal Plan and the existing General Plan, the Coastal Plan shall prevail." LCP Policy 2 only applies for an adopted LCP. The City cannot sweep away inconsistencies between the Proposed Amendments and the General Plan by assuming the Coastal Commission will approve the proposal.

D. "SOAR" Initiative May Prevent Annexing Site Identified in Policy 62 Amendments

The Staff Report assumes that the property identified in the proposed amendment to LCP Policy 62 can be annexed without voter approval, yet the Staff Report does not cite the basis for this conclusion. Based on a review of the SOAR initiative changes, we did not identify an annexation exemption as described by the Staff Report, suggesting a public vote could be required.

III. PROPOSED AMENDMENTS VIOLATE BASIC ZONING LAWS

A. The Proposed Amendments Constitute Impermissible Spot Zoning

The Proposed Amendments would constitute impermissible spot zoning in violation of state law. "Spot zoning" unfairly targets specific properties with uses disfavored by the government using zoning regulations. "The essence of spot zoning is irrational discrimination." *Avenida San Juan Partnership v. City of San Clemente*, 201 Cal. App. 4th 1256, 1268 (2011). Zoning ordinances, which are supposed to be used to effectuate and structure a city's broad plans for development, are instead used against specific properties with uses that the city wishes to limit.

Here, the City has targeted those properties that NRG owns, attempting to rezone them in such a way as to render their particular and longstanding purpose, energy production, a nonconforming use. The purpose is not to further the City's long-term development goals, but

rather to eliminate specific land uses by NRG that the City has come to disfavor. This is an improper application of the City's police power.

"[W]here 'spot zoning' or other restriction upon a particular property evidences a discriminatory design against the property user, the courts will give weight to evidence disclosing a purpose other than that appearing upon the face of the regulation." *G & D Holland Constr. Co. v. City of Marysville*, 12 Cal. App. 3d 989, 994-95 (1970). For example, in *San Diego County v. Williams*, a landowner successfully challenged an interim zoning change implemented specifically to prevent him from building a trailer park, which the county wished to avoid; the court found that the rushed implementation of the zoning ordinance and the county's clear distaste for the project were sufficient to show improper discrimination against the landowner. 126 Cal. App. 804 (1954).

The City here has unfairly targeted NRG in particular, much as the county did in *G & D Holland*. Wishing to do away with energy production in the area, it has rushed to implement the zoning change, dispensing with mandatory procedures in the process, in the hopes of complicating NRG's application to the CEC for P3. Moreover, the City has created a special carve-out for SCE's similarly situated McGrath peaker facility, but granted no such special designation to NRG's OBGS or MGS facilities, the only other properties affected by the change. These ordinances therefore discriminatorily target NRG and its properties; courts will thus be willing to look more deeply into the City's motives for enacting these zoning changes and look unfavorably on this spot zoning.

Where spot zoning has occurred, it is impermissible and subject to revocation by the courts where the record fails to show that the spot zoning is in the public interest and where the zoning decision is arbitrary and capricious or unsupported by the administrative record. *See Foothill Communities Coalition v. City of Orange*, 222 Cal. App. 4th 1302 (2014) (upholding a zoning change that benefited the targeted property owner and the community as a whole by allowing for the construction of a senior center in an otherwise residential neighborhood, but only after carefully reviewing the administrative record to determine that the public interest would in fact be served). Spot zoning changes that harm the property owner without providing a commensurate and substantiated benefit to the public are arbitrary and capricious and constitute a violation of the City's police power. *See, e.g.*, *Avenida San Juan Partnership*, 201 Cal. App. 4th at 1268-72 (striking down a city's zoning of a particular parcel to allow one residence per 20 acres instead of at least four per acre, like all surrounding parcels, because the property was improperly discriminated against and because the city's ostensible policy rationale—protecting steep-sloped canyons—did not make sense in the context of a residential neighborhood).

The City has unfairly targeted NRG properties with its proposed rezoning, and, in its effort to impede NRG's P3 application before the CEC, has done so with such haste that its administrative record is inadequate to support its decision (see discussion below). The City's failure to amend its General Plan prior to rezoning, the insufficiency of its public notice and of any public participation in the decision-making process, and the absence of meaningful consideration of the potential implications of lost energy production capacity, or where such capacity will come from in the future, all militate against the sufficiency of the public process used by the City to justify its proposal.

B. Rezoning Effectively Attempts to Prohibit an Existing and Established Use

Beyond spot zoning, changes to zoning ordinances are impermissible "[w]here the zoning ordinance attempts to exclude and prohibit existing and established uses or businesses that are not nuisances." *Wilkins v. City of San Bernardino*, 29 Cal. 2d 332 (1946); *see also, e.g., Jones v. City of Los Angeles*, 211 Cal. 304, 309-10 (1930) (holding that new zoning ordinances could prohibit sanitariums from being established in certain areas, but could not exclude those that already existed, unless they could be shown to be nuisances). Zoning changes should be forward-looking, and should not attempt to exclude established, ongoing uses. Where an ordinance targets a particular landowner or a particular class of business owners, it cannot have the retroactive effect, either directly or indirectly, of destroying that existing use, unless that use can be shown to be a public nuisance. *Biscay v. City of Burlingame*, 127 Cal. App. 213, 221, (1932) (a city could not prosecute a business for alleged violations of zoning ordinances "to enforce the provisions of those ordinances so far as they relate to the carrying on of a business established before the[ir] enactment").

Here, the City's proposed zoning changes are designed to deprive NRG of the ability to make productive use of its property when the existing plants cease operations. While P3 would constitute a new facility, it is not an attempt to commence a new use for the property, but rather to continue NRG's longstanding use of its property in a manner compliant with new state laws. It is improper for the City to attempt to affect retroactive zoning against NRG by hindering its efforts to continue production of electricity that has been ongoing at the site for nearly 60 years.

NRG has already relied on the existing zoning designation to submit its application to SCE for continued production at the site via P3 and has invested substantial time and effort planning and designing the project and working with the CCC, CPUC, CEC, and other state and local agencies to facilitate its completion. Energy infrastructure takes many years to plan and build, meaning that NRG and SCE have invested heavily in this project already.

While some courts have held that changes to zoning ordinances may allow for the phase-out of now-nonconforming uses over the course of years, the courts have questioned attempts to specifically target one industry, rather than enacting changes of general applicability, and where substantial investment in the land or in an existing use would be abrogated by the change. *See City of Los Angeles v. Gage*, 127 Cal. App. 2d 34, 42-43 (1954) (upholding a zoning change that required buildings originally intended for residential use to be converted back to residential use within a fixed term of years, but noting that this would entail little harm to investment and that the change was of general applicability to all commercial enterprises, rather than targeting a specific business, like sanitariums in *Jones*). Here, the City has specifically targeted gas-fired energy production, spot zoning isolated properties zoned for energy production and nothing else. Worse still, it has targeted NRG in particular by granting special status to the facility owned by SCE while declining any such treatment for NRG's facilities

IV. THE CITY FAILS TO COMPLY WITH CEQA

In its haste to amend the LCP and zoning for the McGrath SCE Peaker Plant, MGS, and OBGS, the City has failed to conduct the appropriate CEQA environmental review for impacts to

lands outside of the Coastal Zone from the Proposed Amendments. In addition, by asking the Coastal Commission to approve just one portion of the City's LCP amendment in advance of the City's comprehensive LCP update, the City is essentially asking the Commission to engage in piecemeal environmental analysis, which is prohibited by CEQA and the CCC's certified regulatory program.

A. The CEQA Exemption for LCP Updates Does Not Extend to the City's Non-LCP Land Use Changes

Under Public Resources Code sections 21080.5 and 21080.9, the City is exempt from preparing an environmental impact report (EIR) prior to approval of an LCP amendment. Cal. Pub. Resources Code, §§ 21080.5, 21080.9; *Santa Barbara County Flower & Nursery Growers Assn. v. County of Santa Barbara*, 121 Cal. App. 4th 864, 873 (2004). Likewise, CEQA Guidelines section 15265 provides that CEQA does not apply to activities and approvals pursuant to the California Coastal Act by any local government necessary for the preparation and adoption of a local coastal program. CEQA Guidelines § 15265. This section shifts the burden of CEQA compliance from the local agency to the Coastal Commission. *Santa Barbara County Flower & Nursery Growers Assn.*, 121 Cal. App. 4th at 873.

While the City's LCP amendment may be exempt from CEQA review, the exemption does not extend to changes to land uses outside of the Coastal Zone. *See* Pub. Res. Code § 30500 (local coastal program applies to "that portion of the coastal zone" within a local government's jurisdiction). Accordingly, the impacts of the proposed Policy 62 amendments must be analyzed under CEQA for the parcel identified as the future location of a power plant.

The City's proposed amendment to LCP Policy 62 specifically addresses property at the "southeast corner of Hueneme Road and Edison Drive." This property is not located in the Coastal Zone and, therefore, there is no legal basis for the Coastal Act to address land use policies and zoning for that property in an LCP Amendment. The appropriate venue to address that site is in an update to the City's General Plan and/or to its zoning ordinance.

It is not adequate to punt CEQA review for this property. The Proposed Amendments materially impact the environment by making it highly likely the property will be the site of a major energy facility, which affects the environment and surrounding communities. These changes are a reasonably foreseeable consequence of the project and must be analyzed under CEQA.

The City cannot rely on the statutory CEQA exemption for LCP updates to avoid CEQA review of the proposed action regarding the Hueneme/Edison property since that property is not located in the Coastal Zone. The City claims that the designation of the Hueneme/Edison site for energy production is "consistent with the 2030 General Plan, has adequate utility and emergency services, and is a compatible land use with existing uses." Staff Report at 23. But neither the 2030 General Plan nor the environmental impact report prepared for the 2030 General Plan includes any analysis of this site as a power plant. This proposed amendment to LCP Policy 62 attempts to short-circuit the public review process that should accompany what would amount to a significant General Plan amendment—a process that would ***not*** be covered by the CEQA

exemption for LCP updates. In addition, as discussed above, the Planning Reserve land use designation is not consistent with a power plant use.

The City improperly attempts to punt any future environmental review of a power plant at the Hueneme/Edison site to the CEC because the CEC will have jurisdiction over major power plants. Staff Report at 9. However, a peaker plant of less than 50 megawatts, like the SCE McGrath Peaker Plant, would not be subject to CEC jurisdiction.

Finally, the City has recognized that CEQA is triggered for its comprehensive LCP update. The City listed "CEQA review" as Objective 5-5 in its application for grant funding from the Coastal Commission. The City explained: "A subsequent Program EIR is anticipated that tiers off of the 2030 General Plan Program EIR for the LCP Update and Chapter 17 Code Update."[10] Pursuant to the schedule provided in the grant application, the City does not anticipate completing this EIR until October 1, 2016. *Id*. Moving forward with only one piece of the "project" at this time without environmental review would constitute illegal piecemealing under CEQA.

B. Approval of the Current Proposal Would Constitute Impermissible Piecemealing from the Larger LCP Update

Moving forward with these proposed targeted amendments without considering the full environmental impacts of the LCP update as a whole would constitute improper piecemealing under CEQA. In other words, because the Proposed Amendments are a possible first step in what should be the City's comprehensive LCP update, the whole of the City's LCP update must be analyzed as a single project.

Under CEQA, a "project" is "an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment . . ." Pub. Res. Code § 21065. CEQA's Guidelines clarify that a "project" as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment . . ." CEQA Guidelines § 15378(a). CEQA Guidelines section 15378(c) provides that "'project' refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies . . . 'project' does not mean each separate governmental approval."

"'Project' is given a broad interpretation in order to maximize protection of the environment. A narrow view of a project could result in the fallacy of division, that is, overlooking its cumulative impact by separately focusing on isolated parts of the whole." *McQueen v. Board of Directors*, 202 Cal. App. 3d 1136, 1143-44 (1988). "This broad interpretation ensures that the requirements of CEQA cannot be avoided by chopping up proposed projects into bite-size pieces which, when taken individually, may have no significant

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10 *See* City of Oxnard, CCC and OPC Grant Joint Application, dated July 7, 2014 (available at http://www.coastal.ca.gov/lcp/grant-apps-14-15/south-central/oxnard_2014_lcp_application.pdf) (Grant Application) at 18.

adverse effect on the environment." *Toulumne County Citizens for Responsible Growth v. City of Sonora*, 155 Cal. App. 4th 1214, 1222 (2007).

For example, in *Laurel Heights Improvement Assn. v. Regents of University of California*, 47 Cal. 3d 376 (1998), the California Supreme Court set aside an EIR that failed to analyze the impacts of a reasonably foreseeable multi-phase project. In *Laurel Heights*, the University of California planned to move its School of Pharmacy to a new building, of which only about one-third was initially available. *Id.* at 393. The EIR acknowledged that the school would eventually occupy the remainder of the building, but only discussed the environmental effects relating to the initial move. *Id.* at 396. The court concluded that the EIR should have analyzed both phases of the project. *Id.* at 399. In so holding, the court announced the following test: "[A]n EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." *Id.* at 396.

Here, the City's Proposed Amendments meet both parts of the *Laurel Heights* test. First, the Proposed Amendments are the first step in the City's larger LCP update[11]—for which the City is preparing an EIR. As a result, it would be arbitrary and capricious to dispute that the LCP update is reasonably foreseeable. Second, the LCP amendment will be broader than the instant amendments and will have a larger scope of environmental impacts than the instant amendments. Accordingly, splitting the targeted Proposed Amendments from the broader LCP update constitutes impermissible piecemealing that is prohibited by CEQA.

Moreover, the Coastal Commission would be barred from approving these targeted amendments for the same reasons. The Coastal Commission conducts environmental review of LCP amendments pursuant to the Commission's certified regulatory program.[12] Accordingly, rather than preparing an EIR for an LCP update, the Coastal Commission prepares an

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[11] Notably, the City's comprehensive LCP update process stems from the City's desire to eliminate power plants along the coast. In its Grant Application, the City recognized that updating the LCP's treatment of the coastal power plants was a critical issue—perhaps the driving issue—for the overall update. *See* Grant Application at 7 ("The City Council sent a clear message that it is serious about updating the LCP and that neither the energy industry nor the California Energy Commission should rely upon the outdated Oxnard LCP with regard to the three existing, and possibly fourth, power plants located on the Oxnard beach.").

[12] Under CEQA, the Secretary of the Resources Agency (Secretary) can certify a state administrative agency's regulatory program. Pub. Res. Code § 21080.5(a). If the program meets certain standards and the Secretary certifies it, the program is exempt from CEQA's requirements for the preparation of EIRs, negative declarations, and initial studies. *Id.* §§ 21080.5(c), (d). The Secretary approved the Commission's certified regulatory program on May 22, 1979. *Ross v. Cal. Coastal Comm.*, 199 Cal. App. 4th 900, 931 (2011); CEQA Guidelines § 15251(c).

environmental review document—i.e., the Coastal Commission's staff report—pursuant to its own regulations. *See* Pub. Res. Code § 21080.5(a); 14 Cal. Code Regs., § 13057(c)(2). Certifying a regulatory program is a determination that the agency's program includes procedures for environmental review and public comment that are "functionally equivalent" to CEQA. *Californians for Alternatives to Toxics v. Dep't of Pesticide Reg.*, 136 Cal. App. 4th 1049, 1059 (2006). When conducting its environmental review and preparing its documentation, however, a certified regulatory program remains subject to the provisions of CEQA outside the scope of the exemption, including CEQA's broad policy goals and substantive standards. *See POET, LLC v. State Air Resources Bd.*, 218 Cal. App. 4th 681 (2013). Accordingly, the Coastal Commission is not immune to CEQA's mandate against piecemealing. Therefore, should the Coastal Commission move forward with certification of the targeted Proposed Amendments before the Coastal Commission considers the LCP update as a whole, the Coastal Commission would be engaging in improper piecemealing and could be vulnerable to a CEQA lawsuit.

C. Potentially Significant Environmental Impacts Will Result from Proposed Amendments

The Staff Report does not evaluate the potentially significant environmental impacts that could result from the Proposed Amendments. As noted above, there are potentially significant environmental impacts with the change to LCP Policy 62, making it highly likely the property will be the site of a major energy facility, which affects the environment and surrounding communities. These changes are a reasonably foreseeable consequence of the project and must be analyzed under CEQA.

Furthermore, the Proposed Amendments include sweeping changes to the uses permitted in the Coastal Recreation (RC) sub-zone, including installation, operation and maintenance of power generating facilities, transmission lines, electrical substations and energy storage facilities. Ironically, since one of the stated purposes of the Proposed Amendments is to enhance recreational use of coastal properties, these changes could result in dramatic adverse consequences to existing coastal recreation areas, which comprise large portions of the Oxnard coastal zone. For example, under the City's proposed revisions to the RC sub-zone, a utility-scale energy storage facility and associated substation and transmission line infrastructure would be conditionally permitted uses in Oxnard Beach Park on South Harbor Boulevard. The City has failed to even consider the potential impacts of this action.

V. THE PROPOSED AMENDMENTS ARE INCONSISTENT WITH THE COASTAL ACT AND THE CITY'S COASTAL ZONING ORDINANCE

The City's Proposed Amendments, which would virtually eliminate coastal power plants, are inconsistent with the Coastal Act's policies that support balancing utilization of coastal resources and ensuring priority for coastal development and coastal-related development. The City is attempting an end-run around its own coastal zoning ordinance and the Coastal Act by removing any Energy Coastal zoning designation from the Oxnard Coastal Zone.

A. The Proposed Amendments Conflict with the Coastal Act's Balancing Goals for Utilizing Coastal Resources

Local coastal program policies are intended to reflect and carry out the coastal resource protection provisions of the Coastal Act of 1976. Those policies are contained in Chapter 3 of the Coastal Act. The policies include sections 30260 and 30264, which encourage the location and expansion of coastal-dependent industrial facilities and thermal electric generating plants in the Coastal Zone:

> Section 30260 Location or expansion. Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.
>
> Section 30264 Thermal electric generating plants. [N]ew or expanded thermal electric generating plants may be constructed in the coastal zone if the proposed coastal site has been determined by the State Energy Resources Conservation and Development Commission to have greater relative merit pursuant to the provisions of Section 25516.1 than available alternative sites and related facilities for an applicant's service area which have been determined to be acceptable pursuant to the provisions of Section 25516.

In pursuing the Proposed Amendments, the City ignores that one of the Legislature's goals in enacting the Coastal Act is to "balance" utilization of Coastal resources "taking into account the social and economic needs of the people of the state." Pub. Res. Code § 30001.5(b). Unilaterally removing industrial development from the Oxnard coastline does not account for the need to ensure a reliable supply of electricty. The City also ignores that one of the Coastal Act's goals is to "assure priority for coastal development and coastal related development." Pub. Res. Code § 30001.5(d). In stark contrast to these goals, the City's Proposed Amendments do not "assure priority" for coastal-related uses—rather, the Proposed Amendments are intended to prohibit such uses. Further, while the Coastal Act certainly encourages coastal-related uses over other development, it does not prohibit non-coastal-related development. The City should not take a local action to prohibit coastal development in conflict with the Coastal Act's balancing goals.

B. The Proposed Amendments Contravene Longstanding Commission Policies Allowing "Reasonable Expansion" of Power Facilities at Existing Sites

In delegating authority to local governments to implement the Coastal Act, the Coastal Act does not become solely a local requirement. Implementing the Coastal Act is fundamentally a state mandate, and the authority to review local decisions concerning the location of energy facilities in the Coastal Zone is indisputably vested in the CCC. *See* Pub. Res. Code § 30603(b)(2).

Here, the CCC has had a long-standing policy since 1978 of allowing "reasonable expansion" of power facilities at existing sites that might not otherwise be suitable for such development to meet the State's energy needs, and the policy does not require such development to be coastal dependent. The CCC's policy does not preclude continued operation or power facility expansions associated with the MGS site.

In 1978, 1984, and 1985, pursuant to section 30413(b) of the Coastal Act, the CCC adopted, revised and re-adopted a report titled "Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976."[13] That report identified sensitive resource areas along the California coast and designated them as areas *not* suitable for power plant siting. *Id*. All designated protected areas (which include state and federal parks, sensitive plant and wildlife habitat areas, and special agricultural lands that were known to exist at the time) were displayed on 162 maps of the coastal zone. *Id*. The designations do not preclude "reasonable expansion" of the then 19 existing coastal power plants, including the MGS and OBGS. *Id*.

As part of a parallel process that occurred in conjunction with the CCC and San Francisco Bay Conservation and Development Commission, the CEC released a report in 1980 addressing "Opportunities to Expand Coastal Power Plants in California." *Id*. This report was also produced in response to the mandates of Coastal Act section 30413 and is based on a study conducted by the CEC, CCC, and Bay Conservation and Development Commission that specifically examined opportunities for the "reasonable expansion" of existing coastal zone power plants in California. *Id*. The report found that "legislative mandates of the CCC . . . require that their designations to protect coastal resources not be applied to specific areas necessary for the "reasonable" expansion of existing coastal zone power plants . . . [which includes] the provision, or maintenance, of land area adequate to satisfy a specific site's share of the state's need for increased electrical power generating capacity." *Id*.

The CEC's report also included maps designating the location and extent of coastal power plants and the adjacent areas determined to be suitable for reasonable expansion of these facilities. The map provided of the MGS designates it as a "power plant area." *Id*. at 25. The City should not adopt amendments that conflict with these state agencies' policies providing for reasonable expansion opportunities at this site.

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13 *See* Recommended Revised Findings on Appeal, Appeal No. A-4-OXN-07-096 (Southern California Edison Company) (Aug. 13, 2009) at p. 24 (available at http://documents.coastal.ca.gov/reports/2009/8/Th10a-8-2009.pdf).

C. The Proposed Amendments Would Result in Internal Inconsistencies with the City's Coastal Zoning Ordinance

The Staff Report also fails to discuss the Proposed Amendments' inconsistency with existing Coastal Zoning Ordinance section 17-20, which addresses the EC, or Coastal Energy Facilities Sub-Zone. Section 17-20(A) of the LCP's Coastal Zoning Ordinance provides:

> The purpose of the EC sub-zone is to provide areas that allow for siting, construction, modification and maintenance of power generating facilities and electrical substations with Policies 51, 52, 54, 55, 56 of the Oxnard land use plan. Additionally, the EC sub-zone is designed to provide a framework for coordinating the requirements and responsibilities of applicable city, State and federal regulatory agencies vested with the authority for reviewing energy facility development. To assure consistency with the Oxnard coastal land use plan, the following coastal act provisions and land use policies shall apply:
>
> (1) Coastal dependent energy facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth, where consistent with this article. . ."

Oxnard Municipal Code § 17-20(A).

Section 17-20(A)(1) of the EC Sub-Zone provides that "coastal dependent energy facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable, long-term growth, where consistent with this article," citing Coastal Act section 30260. Section 17-20 is intended to provide an organized framework "for coordinating the requirements and responsibilities of applicable city, State and federal regulatory agencies vested with the authority for reviewing energy facility development" and includes a range of policies and standards. The Proposed Amendments disregard the diverse policy considerations contemplated by section 17-20 by simply rezoning all EC properties to RC, with a hastily drafted carve-out for existing Southern California Edison Company power generation facilities added to the RC text.

In sum, the Proposed Amendments would make the City's coastal zoning code internally inconsistent, without any justifying explanation. The Proposed Amendments effectively prohibit the location or expansion of "coastal power plants"—essentially defined to be NRG's facilities—due to concerns about sea level rise, while permitting solar generation of less than 10 MW; subsurface or surface transmission facilities to connect off-shore renewable power facilities to the grid; and energy grid substations, transmission and distribution facilities, and electric power storage facilities. There is no analysis or discussion of why these limited energy-related uses are permissible but other energy-related uses are not. Without justification, it appears that the City is simply taking a unilateral action to prohibit coastal power plants, despite Coastal Act policies and LCP policies that promote a reasonable expansion of such uses.

VI. THE PROPOSED AMENDMENTS ARE NOT SUPPORTED BY SUBSTANTIAL EVIDENCE

A. Substantial Evidence Demonstrates That MGS Is Not at Risk

The substantive justification supporting the Proposed Amendments is faulty. Staff appears to be suggesting that the Proposed Amendments are warranted based on "coastal hazards risk and emergency response uncertainty over the operating life of a new power plant adjacent to the existing MGS [Mandalay Generating Station] . . ." Staff Report at 8. In support of this proposition, the Staff Report summarizes, without citation to supporting documentation, purported findings of consultants retained by the City. Amongst the unsupported statements in the Staff Report are: i) "[b]y 2060, most [sic] the MGS site will face significant coastal hazard exposure;" ii) ". . . NRG's reliance on dredging and natural sand movement for 30 years of coastal protection is an assumption with which the City does not agree;" and iii) . . . "the [MGS] site faces a current risk of inundation from a tsunami generated by the State-defined Goleta 2 Landslide . . . ." Staff Report at 7.

Contrary to the assertions in the Staff Report, expert analysis docketed with the CPUC (Application 14-11-016) and CEC in the P3 proceedings (Docket No. 15-AFC-01) demonstrates that the MGS site, including the proposed location of P3, is not subject to significant risk associated with coastal hazards, even assuming maximum projected sea level rise over the life of the project.[14] In any instance, the proper forum for evaluating P3 is the CEC proceeding, where the City is a very active intervenor. Instead of unilaterally moving forward with the Proposed Amendments based on only its own evidence, the City should engage in the CEC proceedings where evidence of all interested parties can be weighed by the CEC to determine whether P3 should be approved.

B. The City Has Failed to Include Evidence in Record or for Public Review That Justifies Conclusions

There is a glaring lack of evidence behind the Proposed Amendments. The Staff Report makes a few oblique references to evidence compiled for purposes of the CEC and CPUC proceedings, but a detailed analysis or evidence was not provided. There was no mention of any contrary evidence, such as NRG's detailed evidence in the CEC proceeding. It would be an abuse of discretion and unreasonable for the Planning Commission to move forward based on such a scant record and narrow viewpoint.

At a minimum, the Planning Commission would have to slow down and complete detailed hearings to weigh the evidence for and against the proposal from all interested parties.

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[14] *See* CEC Application for Certification, Appendix N-2, Sea Level Rise Analysis, 4/15/15, TN# 204220-14 (Exhibit 4); Applicant's Responses to City of Oxnard Data Requests, Set 2 (47-67), 10/8/15, TN# 206310 (Exhibit 5); Applicant's Responses to City of Oxnard Data Requests, Set 2, 30-day Extension (59, 60 and 62), 11/6/15, TN# 206533 (Exhibit 6); and Reply Brief of NRG Energy Center Oxnard LLC and NRG California South LLP, 8/5/15 (Exhibit 7).

Without such a good faith effort, the Planning Commission would not be complying with the Coastal Act's requirement to offer "maximum opportunities for the participation of the public. . . in the preparation of the LCP." Coastal Act § 30503; Coastal Act Regulations § 13515.

C. The City Has Not Presented a Rational Basis for Singling Out the Property Identified in the Proposed Changes to LCP Policy 62

With the Proposed Amendments, the City seeks to enshrine within its local coastal plan a preferred site for future natural gas fired generation at the southeast corner of Hueneme Road and Edison Drive. Staff Report at 9. The identification of this proposed site is interesting for several reasons.

First, in testimony before the CEC at the Informational Hearing for P3, City staff identified five alternative sites that it asked NRG and the CEC to evaluate for P3.[15] Of interest, what is now presumably the City's preferred location for natural gas fired generation does not even appear on the list.

Second, it does not appear that any analysis whatsoever has been conducted regarding the suitability of the proposed site for electrical power generation (at least there is no analysis contained in the record for the Proposed Amendments). No analysis of the technical suitability of the site with respect to size, and access to necessary infrastructure for natural gas, water and transmission has been completed. No analysis of the potential environmental consequences of developing on the proposed site has been completed. No analysis of the receptivity of the local community (including, as we understand it, the current property owner) to a power plant at the proposed site has been conducted. Notwithstanding the lack of any analysis whatsoever, the City is apparently prepared to unilaterally declare, and enshrine in the LCP, this location as the preferred site for new power plant development.

Third, the Staff Report asserts that CEC staff "has also recognized this location as a feasible alternative site to the proposed NRG Mandalay project [P3] . . ." Staff Report at p. 9. As with most of the other assertions in the Staff Report, there is no support provided. NRG is unaware of any such determination by the CEC staff, which has yet to produce even its Preliminary Staff Assessment for P3, in which it will undoubtedly address potential alternative locations. Furthermore, as discussed above, the proposed site is not even on the list of sites that the City requested the CEC analyze.

VII. THE PROPOSED AMENDMENTS VIOLATE THE CONDITIONS OF THE CCC'S LCP GRANT

The City's Proposed Amendments circumvent the comprehensive LCP update requested in its Grant Application to the CCC. The City has provided no justified basis for proceeding with an expedited targeted attack against the NRG properties instead of pursuing the

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15 *See* City of Oxnard Comments Responding to CEC Issues Identification [sic] of August 10, 2015, 8/31/15, TN# 205930 (Exhibit 8).

comprehensive update in due course. The Proposed Amendments are in direct conflict with the CCC's grant to prepare a ***comprehensive*** LCP update.

The City is either improperly relying upon grant funds to prepare this targeted attack on NRG or clearly has additional funds available for LCP-related activities and does not truly need the grant funding. If the City is improperly using grant funding for the Proposed Amendments, it must immediately cease doing so and return any previously used funds to the CCC for reallocation to communities in need. In any instance, the City's extraneous actions pursuing a targeted attack against NRG instead of diligently pursuing the comprehensive LCP update demonstrate that the City does not have an actual need for the limited grant funding. Accordingly, the City should return any remaining grant funds to the CCC for reallocation to a community in need, consistent with the Budget Act of 2014 (the source of the grant funding) and conditions included in the CCC's Proposed Local Coastal Program Local Assistance Grant Awards for Fiscal Year 2014/2015 Using Funds from Budget Augmentation (Grant Award Recommendation).[16]

Specifically, the CCC grant includes conditions that limit the City's discretion to use the grant funding, including:

- "If a grantee fails to properly execute the contract or fails to meet the performance criteria and benchmarks in the grant contract, the Executive Director or his designee may cancel the contract and re-allocate any unspent funds to one or more of the other approved grantees whose grant was not fully funded." Grant Award Recommendation at 40.

- "Should a jurisdiction not need the full amount of funds awarded by the Coastal Commission, they shall notify Commission staff as soon as possible so that any remaining allocated but unspent funds may be redistributed, as feasible." *Id*.

- "All grant contracts shall require progress reports at least every 3 months, and all subject to Executive Director review and approval." *Id*. at 39.

Moreover, in an Addendum to the Grant Award Recommendation, dated November 7, 2014, the CCC defined the expected outcome of the grant to the City of Oxnard:

- The Addendum confirms that "The City of Oxnard is requesting grant funds ***to complete a comprehensive update***, including a sea-level rise analysis and adaptation section." Addendum at 27.

- The Addendum recognizes that the City will complete CEQA review of the LCP update and sea level rise study. *Id*.

16 *See* http://documents.coastal.ca.gov/reports/2014/11/W7-11-2014.pdf.

- Notably, the Addendum concludes: "**The outcome of this grant is expected to be a submittal of a comprehensive LCP Update for Commission certification**." *Id*. (emphasis in original).

The City's Grant Application and the CCC's response make clear that the Proposed Amendments are ***not within the scope of the LCP grant***. In its Application, the City highlighted its moratorium on new or repowered power plants and its intent to address power plants in the LCP update. Grant Application at 7 ("The City Council sent a clear message that it is serious about updating the LCP and that neither the energy industry nor the California Energy Commission should rely upon the outdated Oxnard LCP with regard to the three existing, and possibly fourth, power plants located on the Oxnard beach.").

In response, the CCC recognized the Coastal Act's identification of industrial facilities as priority uses in the Coastal Zone and strongly cautioned the City against viewing the grant as any type of concurrence about the proposed prohibition:

> The City has also identified two once-through cooling power generation facilities as being at risk from sea-level rise and has proposed to prohibit such facilities within its coastal zone. ***The Coastal Act includes a number of policies identifying industrial facilities as priority uses in the coastal zone***. ***Approval of this grant to Oxnard should not be construed as the Commission's approval, even in concept, of the City's proposed prohibition***. The City should review Coastal Act policies, specifically 30260 and 30264, when updating its LCP to evaluate whether such a prohibition is consistent with relevant Coastal Act policies.

Addendum at 28 (emphasis added).

In conclusion, the City's Proposed Amendments circumvent the comprehensive LCP update requested in its Grant Application. The City has provided no justified basis for proceeding with an expedited targeted attack against the NRG properties instead of pursuing the comprehensive update in due course. The Proposed Amendments are directly inconsistent with the CCC's grant. The City must immediately cease using any grant funds to proceed with the Proposed Amendments and return any funding previously used. The City's expenditures of funds on this extraneous effort also demonstrate a lack of need for funding in the first instance. In accordance with the CCC grant conditions, the City must return the unneeded funds to the CCC for reallocation to a community in need.

VIII. THE PROPOSED AMENDMENTS COULD RESULT IN AN UNCONSTITUTIONAL TAKING

By potentially eliminating virtually all economically beneficial uses of NRG's property once the state's once-through cooling rules take effect at the end of 2020 without providing compensation, the Proposed Amendments may result in an unconstitutional regulatory taking under both the California and United States Constitutions. The City's aggressive rezoning plan

could effectively thwart future energy production at the site beyond 2020, depriving NRG of the economic benefits of its property.

A categorical or per se taking can occur when government regulations deprive a landowner of "all economically beneficial use" of property. *Lucas v. South Carolina Coastal Council*, 505 US 1003, 1015-16 (1992). Even if a government regulation does not deprive a landowner of *all* economically beneficial use, it may nonetheless go too far in placing what should be a public burden on private shoulders. In *Penn Central Tranps. Co. v. New York City*, 438 U.S. 104 (1978), the U.S. Supreme Court prescribed an ad hoc, case-by-case approach to determining whether a regulatory taking has occurred. The relevant factors to be weighed include: (1) "[t]he economic impact of the regulation on the claimant"; (2) "the extent to which the regulation interfered with distinct investment-backed expectations"; and (3) "the character of the governmental action." *Penn Central* at 124; *see also Kavanau v. Santa Monica Rent Control Board*, Cal. 4th 761 (1997) (holding that when a regulation does not result in a physical invasion and does not deprive the property owner of all economically beneficial use of the property, a reviewing court must evaluate the regulation in light of the ad hoc three-part test established in *Penn Central*).

Here, the *Penn Central* factors suggest that the proposed rezoning could, in fact, constitute a regulatory taking. The economic impact of the ordinance on NRG could be enormous, as NRG intends to site its new P3 natural gas plant on the site, and its right to conduct its business as an energy company on its property could be materially impaired. NRG has relied on the provisions of the Coastal Act and corresponding provisions of the existing LCP promoting the expansion of power generation on existing sites, as described above in Section V, as well as its longstanding operations at the site, to begin working with SCE and various state and local agencies to design and permit the P3 facility. These substantial investment-backed expectations could be in jeopardy if the Proposed Amendments are approved.

IX. CONCLUSIONS

The City is rushing forward with the Proposed Amendments in direct contravention of procedural and substantive legal requirements. In so doing, it is squandering public resources and exposing the City to liability for its flagrant disregard for minimum legal requirements all in an effort to throw up roadblocks to the development of P3 that can be swept away by the state's override authority to ensure a reliable electricity supply. The City should instead devote its time and resources to completing the comprehensive LCP update, participating constructively in the CEC proceedings on P3, and engaging in good faith discussions with NRG to secure tangible benefits for the citizens of Oxnard.

Thank you for considering our comments. We hereby request that these comments and all materials cited herein, including the attached Exhibits and all materials cited therein, be incorporated into the record of the proceedings before the Planning Commission on the Proposed Amendments. If you have any questions, please reach out to me at the contact information provided above.

Sincerely,

/s/ Michael J. Carroll

Michael J. Carroll
of LATHAM & WATKINS LLP

cc:

City of Oxnard Planning Commissioners (via maria.santana@ci.oxnard.ca.us)

- Deirdre Frank, Chair
- Stephen Huber, Vice-Chairman
- Patrick Mullin, Commissioner
- Sonny Okada, Commissioner
- Vincent Stewart, Commissioner
- Orlando Dozier, Commissioner

City of Oxnard, City Councilmembers

- Tim Flynn, Mayor
- Carmen Ramirez, Mayor Pro Tem
- Brian A. MacDonald, Councilmember
- Dorina Padilla, Councilmember
- Bert E. Perello, Councilmember

Dr. Charles Lester, Executive Director, California Coastal Commission
Mr. Rob Oglesby, Executive Director, California Energy Commission

Attachments (included to all cc's)

EXHIBIT 1

From: Gleiter, Dawn
Sent: Friday, November 06, 2015 2:39 PM
To: 'Chris Williamson'; Murr, George; Russell Archer
Cc: Ashley Golden; Rahsaan Tilford; Beatty, Sean;
Subject: RE: City of Oxnard - Rezoning of Ormond, Mandalay, and McGrath peaker plant areas scheduled for Nov 17 Planning Commission
Importance: High

Thanks Chris-

I appreciate your comments about the information being publically available at the end of next week but NRG is very concerned about the proposed timing for the Planning Commission Meeting.

If you could be so kind as to provide as much of the materials (exact modification language extra) for the proposed change as possible as quickly as possible I would greatly appreciate it.

Best,

nrg
Power to be free

Dawn Gleiter
Director of Sustainable Development
100 California St, Ste 650
San Francisco CA, 94111

D: 415.627.1673
m: 925.783.3960
dawn.gleiter@nrgenergy.com

From: Chris Williamson [mailto:Chris.Williamson@ci.oxnard.ca.us]
Sent: Thursday, November 05, 2015 10:59 AM
To: Gleiter, Dawn; Murr, George; Russell Archer
Cc: Ashley Golden; Rahsaan Tilford
Subject: City of Oxnard - Rezoning of Ormond, Mandalay, and McGrath peaker plant areas scheduled for Nov 17 Planning Commission

TO: Dawn Gleiter and George Murr, NRG
AND: Russell Archer, SCE

At the direction of the Oxnard City Council, rezonings of the Ormond Beach and Mandalay Generating Stations and the SCE McGrath peaker plant and adjoining SCE land are proposed and scheduled for the Nov 19 Planning Commission, 7:00 pm, in City Council chambers, 300 West Third Street.

The notice is attached.

Official notices are in the mail, site signs are going up within the public rights-of-way near each property, and the official ad will run in today's VIDA local newspaper. Late next week, the staff report and associated documents will be available to the public, posted on the City's webpage as part of the agenda for the Planning Commission meeting.

After the Planning Commission, the City Council would have to adopt the rezoning, and then we submit the actions to the Coastal Commission for certification.

Please note that the 'new' zoning allows for solar power generation installation, battery storage, transmission and substations, and offshore energy transmission facilities. The Local Coastal Plan is also proposed for amendment language that designates a location - not in the coastal zone because of sea level rise - for a new consolidated power generation facility near the intersection of Hueneme Rd and Edison Drive.

I am available for questions, etc.

Chris Williamson, AICP, Principal Planner
City of Oxnard Planning Division
214 South C Street Oxnard, CA 93030
805-385-8156

Live Long and Prosper !
FAX 385-7417
chris.williamson@ci.oxnard.ca.us

EXHIBIT 2

From: Chris Williamson [mailto:Chris.Williamson@ci.oxnard.ca.us]
Sent: Tuesday, November 10, 2015 5:45 PM
To: Gleiter, Dawn; Russell Archer
Subject: Oxnard - Attached are documents for Planning Commission hearing of Nov 19 2015 regarding NRG and SCE rezoning, etc.

Dawn Gleiter, NRG
Russell Archer, SCE

Please find attached the staff report for the advertised actions that impact your respective properties at the Mandalay and Ormond Beach Generating Stations, with the exception of Attachment D. Attachment D will be sent Thursday morning.

The scan quality is a little low, and I had to compress the file. I'll resent again on Thursday with better quality for your printing.

The Planning Commission meets at 7:00 pm in the City Council chambers, 300 West Third Street.

Chris Williamson, AICP, Principal Planner
City of Oxnard Planning Division
214 South C Street Oxnard, CA 93030
805-385-8156

Live Long and Prosper !
FAX 385-7417
chris.williamson@ci.oxnard.ca.us

EXHIBIT 3

From: Chris Williamson [mailto:Chris.Williamson@ci.oxnard.ca.us]
Sent: Monday, November 16, 2015 10:57 AM
To: Gleiter, Dawn
Subject: RE: Oxnard - Attachment "E" will come on Thursday, not "D".

Of course..
Here is the entire document, now posted on the City's website for the Nov. 19 meeting.
Your request for continuance and public records request have both been received.

Chris Williamson, AICP, Principal Planner
City of Oxnard Planning Division
214 South C Street Oxnard, CA 93030
805-385-8156

Live Long and Prosper !
FAX 385-7417
chris.williamson@ci.oxnard.ca.us

>>> "Gleiter, Dawn" <Dawn.Gleiter@nrg.com> 11/16/2015 10:39 AM >>>

Hi Chris-

Just checking in on Attachment E, I did not receive anything. Could you please be so kind as to send this information

Thanks!

nrg
Power to be free

Dawn Gleiter
Director of Sustainable Development
100 California St, Ste 650
San Francisco CA, 94111

D: 415.627.1673
m: 925.783.3960
dawn.gleiter@nrgenergy.com

EXHIBIT 4

DOCKETED

Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	204220-14
Document Title:	Appendix N Water Resources
Description:	AFC Volume II
Filer:	Sabrina Savala
Organization:	NRG Oxnard Energy Center, LLC
Submitter Role:	Applicant
Submission Date:	4/16/2015 11:22:10 AM
Docketed Date:	4/15/2015

APPENDIX N

WATER RESOURCES

APPENDIX N-1

MGS NPDES PERMIT NUMBER CA0001180

California Regional Water Quality Control Board

Los Angeles Region

(50 Years Serving Coastal Los Angeles and Ventura Counties)

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640
Internet Address: http://www.swrcb.ca.gov/rwqcb4

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

May 18, 2001

Mr. R.W. Lawhn, Manager
Environmental Department
Reliant Energy
12301 Kurland Drive
Huston, TX 77034

Dear Mr. Lawhn:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT (NPDES) – RELIANT ENERGY INCORPORATED, MANDALAY GENERATING STATION, (NPDES PERMIT NO. CA0001180, CI 2093)

Our letter dated March 27, 2001, transmitted revised tentative requirements for your waste discharge.

Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on April 26, 2001, reviewed the revised tentative requirements with the change sheet, considered all factors in the case, and adopted Order No. 01-057 (copy attached) relative to this waste discharge. This Order serves as a permit under the National Pollutant Discharge Elimination System (NPDES), and expires on March 10, 2006. Section 13376 of the California Water Code requires that an application for a new permit must be filed at least 180 days before the expiration date.

The adopted Order includes the changes described in the March 27, 2001 letter and was modified with the inclusion of language describing the chlorination profile test performed in the Spring of 2000 in Finding No. 27. The Monitoring and Reporting Program was also updated to include quarterly monitoring of fecal coliform, total coliform and enterococci, and a change from analysis for total residual sodium bromide to oxidant concentrations in the monitoring program for algicide spraying.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this Order. Your first monitoring report for May 2001 is due by July 1, 2001. All monitoring reports should be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File CI-2093 and NPDES No. CA0001180, which will

assure that the reports, are directed to the appropriate file and staff. Please do not combine your discharge monitoring reports with other reports. Submit each type of report as a separate document.

If you have any question please contact Cassandra Owens at (213) 576-6750.

Sincerely,

David Hung, Chief
Industrial Permitting Unit

Enclosures

cc: Environmental Protection Agency, Region 9, Permits Branch (WTR-5)
U.S. Army Corps of Engineers
NOAA, National Marine Fisheries Service
Department of Interior, U.S. Fish and Wildlife Service
Mr. Jim Kassel, State Water Resources Control Board, Division of Water Quality
Mr. William Paznokas, Department of Fish and Game, Region 5
Department of Health Services, Sanitary Engineering Section
California State Parks and Recreation
California Coastal Commission, South Coast Region
County of Ventura, Resource Management Agency, Environmental Health Division
County of Ventura, Department of Planning
County of Ventura, Public Works Agency, Flood Control, and Water Resources Department
Ms. Vicki Musgrove, County of Ventura, Flood Control District
City of Oxnard, Department of Public Works
City of San Buenaventura, Department of Public Works
City of Ventura
Citizens to Preserve Ojai
Sierra Club, Southern Coastal Coordinator
Friends of the Ventura River
Mr. Paul Jenkin, Surfrider Foundation, Ventura County Chapter
Ms. Jessica Altstatt, Santa Barbara Channel Keeper
Vicki Clark, Environmental Defense Center
Dr. Mark Gold, Heal the Bay
Mr. David Beckman, NRDC
Ms. Julie Babcock, Reliant Energy
Mr. Ed Malinowski, Mandalay Generating Station

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. 01-057

NPDES NO. CA0001180

WASTE DISCHARGE REQUIREMENTS FOR RELIANT ENERGY INCORPORATED (Mandalay Generating Station)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board), finds:

1. Reliant Energy, Inc (hereinafter Reliant or Discharger) discharges waste from the Mandalay Generating Station (hereinafter Mandalay) under waste discharge requirements contained in Order No. 94-131 (NPDES No. CA0001180) adopted by this Regional Board on December 5, 1994.

2. Reliant Energy has filed a Report of Waste Discharge (ROWD) and has applied for renewal of its waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit.

3. A permit for the operation of Mandalay (Order No. 94-131) was originally issued to Southern California Edison. On April 2, 1998, the Regional Board was notified that Mandalay had been sold to Ocean Vista Power Generation, L.L.C., a subsidiary of Houston Industries Incorporated, changed its name to Reliant Energy Mandalay L.L.C., a subsidiary of Reliant Energy, Inc. and concurrently, the name of the power station became Mandalay.

Description of the Facility Operations

4. The Discharger operates Mandalay, a plant with a design capacity of 560 megawatts, at 393 North Harbor Boulevard, Oxnard, California. Mandalay discharges up to 255.3 million gallons per day (mgd) of wastes consisting of once-through cooling water from two steam electric generating units (four condenser halves), metal cleaning wastes, and low volume wastes (includes softener regeneration wastes, fireside and air preheater washes, floor drains, boiler blowdown and evaporator blowdown wastes) into the Pacific Ocean at Mandalay Beach in Oxnard, a water of the United States. The wastes are discharged through a concrete and rock-revetted structure (Discharge Serial No. 001) located at a point directly across the beach, west of the plant (Latitude: 34° 12' 23"; Longitude: 119° 15' 09").

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The cooling water intake structure is located east of the plant at the shoreline (Discharge Serial No. 002 during heat treatment as described below) and draws water from the surface to a depth of 18 feet via a canal originating in the Channel Islands Harbor. Figure 1 shows the location map of the facility.

5. The operations contributing to flow at the Mandalay facility includes:

Operation	Flow (mgd)	Treatment Description
Once-through cooling water	255	Ocean Discharge
Boiler Blowdown	0.012	Ocean Discharge
Evaporator Blowdown	0.04	Ocean Discharge
South Yard Drains	Negligible	Retention & Ocean Discharge
North Yard Drains	Negligible	Retention & Ocean Discharge
Softener Regeneration	0.013	Retention & Ocean Discharge
Fireside and Air Preheater Wash	0.035	Retention & Ocean Discharge
Floor Drains	0.072	Oil Removal, Retention, & Ocean Discharge
Condensate Overboard	Negligible	Oil Removal, Retention, & Ocean Discharge
Chemical Metal Cleaning	0.08	Lime Precipitation, Retention, Sludge Disposal, & Ocean Discharge
West Yard Drains	Negligible	Retention & Ocean Discharge

Figure 2 shows the schematic diagram of the wastewater flow.

6. The chemical metal cleaning wastes are placed in portable tanks, then processed through a contractor-owned mobile lime treatment unit that discharges to the retention basin. The treated chemical metal cleaning wastes, non-chemical metal cleaning wastes, and low volume wastes are then stored in two settling basins before discharge to the Pacific Ocean through the Discharge Serial No. 001. Sludge and residues in the basins and from treatment are periodically hauled away to legal disposal sites.

7. The Discharger sprays algicide to the banks of the Mandalay intake canal during the spring and summer months to control undesirable algal growth which clogs the intake screens and impedes the pumping of cooling water through the generating station. No adverse water quality impacts have been observed due to algicide applications.

8. The Discharger controls marine fouling of the cooling water conduit (intake and four waterboxes) by temporarily recirculating (thus increasing the temperature) and diverting the flow of the once-through cooling water through the recirculation tunnel. This procedure (referred to as "heat treatment") is typically conducted every five (5) weeks and lasts for about two (2) hours per conduit. During heat treatment, the temperature of waste discharged does not exceed 125°F except during adjustment of the recirculation gate at which time the temperature of the wastes discharged does not exceed 135°F.

Temperature fluctuations during gate adjustment above 125°F will last no longer than 30 minutes.

9. Any debris that accumulates in the intake structure is collected in a container, removed and disposed of by the City of Oxnard.

10. The condenser tubes are arranged in banks of two per generating station. Biological growth on the condenser tubes is controlled by intermittently injecting chlorine in the form of sodium hypochlorite into the cooling water system. There are two chlorination cycles per day during November through February, and three chlorination cycles per day during March through October. Each cycle consists of 10 minutes per condenser half, plus 10 minutes for each of three bearing cooling water heat exchangers. Condenser halves and heat exchangers are chlorinated sequentially during each cycle. The maximum total daily chlorination time is 210 minutes or 3.5 hours per day. During November through February, the total daily chlorination time is 140 minutes/day.

Storm Water Management

11. Mandalay currently does not separate process wastewater from storm water runoff. The stormwater is collected in a holding basin and discharged to the ocean via Discharge Serial No. 001. During major storm events the storm water runoff is discharged directly to the ocean.

12. Pursuant to Section 402(p) of the Clean Water Act and 40 CFR Parts 122, 123, and 124, the State Board adopted a general NPDES permit to regulate stormwater discharges associated with industrial activity (State Board Order No. 91-13-DWQ adopted in November 1991, amended by Order No. 92-12-DWQ adopted in September 1992, and renewed by Order No. 97-03-DWQ, NPDES Permit No. CAS000001 adopted on April 17, 1997). Storm water discharges from power plants are subject to requirements under this general permit.

    Mandalay has implemented a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the general NPDES permit for stormwater discharges.

Discharge Quality

13. The effluent characteristics as reported in the permit application follows:

Constituent	Units	30-Day Average	Daily Maximum
Flow	mgd	----	255.3
Temperature			
Winter (Oct. - April)	°F	102	123*
Summer (May - Sept.)	°F	110	129*

Constituent	Units	30-Day Average	Daily Maximum
pH	pH units	----	8.8
$BOD_5$20°C	mg/L	----	1.0
COD	mg/L	----	34
Total suspended solids	mg/L	----	13.5
Bromide	mg/L	----	48
Total residual chlorine	mg/L	----	0.23
Fecal coliform	MPN/100ml	----	>23
Fluoride	mg/L	----	0.4
Nitrate-Nitrite (as Nitrogen)	mg/L	----	0.9
Nitrogen (Total organic)	mg/L	----	1.5
Oil and grease	mg/L	----	9.1
Phosphorous	mg/L	----	0.3
Aluminum	mg/L	----	1.43
Barium	mg/L	----	0.021
Boron	mg/L	----	3.34
Iron	mg/L	----	1.34
Magnesium	mg/L	----	826
Molybdenum	mg/L	----	0.008
Manganese	mg/L	----	0.071
Titanium	mg/L	----	0.069
Copper	mg/L	----	0.010
Sulfite (as SO_3)	mg/L	----	2.0
Sulfate (as SO_4)	mg/L	----	2150
Radium, Total	pCi/L	----	1.32
Beta, Total	pCi/L	----	156.4
Alpha, Total	pCi/L	----	3.39

* During heat treatment.

All other targeted analytes were not detected.

14. Over the five-year period between December 1994 and December 2000, the Discharger had six exceedances of the 30-day average for copper. Exceedances were recorded in June and December of 1996, December of 1997, June and December of 1998 and December of 2000. There was also one exceedance of the 30-day average for lead reported in June 1998.

Noncompliance issues have been referred to the Enforcement Unit.

Applicable Plans, Policies, and Regulations

15. Section 316 (b) of the Federal Clean Water Act (Clean Water Act) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best available technology for minimizing adverse environmental impacts.

In accordance with Federal and State guidelines for Section 316(b) of the Clean Water Act, the Discharger conducted a study to determine whether the cooling water intake structures are in compliance. The study adequately addressed the important ecological and engineering factors specified in the guidelines, demonstrated that ecological impacts of the intake system are environmentally acceptable, and determined that no modification to the intake structure is required. The design, construction, and operation of the intake structure represent Best Available Technology as is required by Section 316(b) of the Clean Water Act.

16. On November 19, 1982, the USEPA promulgated *Effluent Guidelines and Standards for the Steam Electric Power Generating Point Source Category* (40 CFR Part 423). This regulation prescribes effluent limitations for once-through cooling water and various in-plant waste streams.

    40 CFR 423.12(a) includes provisions to adjust the limitations in 40 CFR Part 423 for in-plant waste streams for certain plants where the factors used in developing the limitations are significantly different from those associated with the equipment or facilities involved.

17. On July 23, 1997, the State Water Resource Control Board (State Board) adopted a revised *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan). The Ocean Plan contains water quality objectives for coastal waters of California. This Order includes effluent and receiving water limitations, prohibitions, and provisions that implement the objectives of the Ocean Plan.

18. On September 18, 1975, the State Board adopted a revised version of the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan). The Thermal Plan contains temperature objectives for the Pacific Ocean.

    In compliance with the Thermal Plan and in accordance with Regional Board specification, the Discharger conducted a thermal effects study. The study demonstrated that waste discharges from the power plant are in compliance with the Thermal Plan and beneficial uses of the receiving waters are protected, as required by Section 316 (a) of the Clean Water Act.

19. On June 13, 1994, the Regional Board adopted a revised *Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) as amended on January 27, 1997 by Regional Board Resolution No. 97-02. The Basin Plan (i) designates beneficial uses for surface and groundwaters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state antidegradation policy (*Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Water Resources Control Board (State Board) Resolution No. 68-16, October 28, 1968), and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent

water quality policies and regulations. The 1994 update of the Basin Plan has been prepared to be consistent with all State and Regional Board plans and policies adopted to date. This Order implements the plans, policies and provisions of the Regional Board's Basin Plan.

20. **Beneficial Uses**. The Basin Plan contains water quality objectives and beneficial uses for the Pacific Ocean.

Nearshore Zone (Bounded by the shoreline and a line 1,000 feet from the shoreline or the 30-foot depth contour, whichever is farther from shore):

Existing: industrial service supply, navigation, water contact and non-water contact recreation, commercial and sport fishing, support of marine habitat, support of wildlife habitat, preservation of biological habitats, support of rare, threatened, or endangered species, migration of aquatic organisms, support of habitats suitable for spawning, reproduction, and/or early development, and support of habitats suitable for shellfish harvesting.

Offshore Zone:

Existing: navigation, contact and non-contact recreation, commercial and sport fishing, support of marine habitat, support of wildlife habitat, support of rare, threatened, or endangered species, migration of aquatic organisms, support of habitats suitable for spawning, and support of habitats suitable for shellfish harvesting.

21. **Watershed Approach.** The Regional Board has implemented a Watershed Management Approach, in accordance with *Watershed Protection: A Project Focus* (EPA841-R-95-003, August 1995), to address water quality protection in the Los Angeles Region. Programs covered under the Watershed Management Initiative include regulatory (e.g., NPDES), monitoring and assessment, basin planning and water quality standards, watershed management, wetlands, total maximum daily loads (TMDLs), 401 certifications, groundwater (as appropriate), and nonpoint source management activities. The Watershed Management Approach integrates the Regional Board's many diverse programs, particularly, permitting, planning, and other surface-water oriented programs. It emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with the resources available. This approach facilitates a more accurate assessment of cumulative impacts of pollutants from both point and nonpoint sources.

The Los Angeles Region encompasses ten Watershed Management Areas (WMA) which are the geographically defined watershed areas where the Regional Board implements the watershed approach. The Board has enumerated significant issues in each of the WMAs. Significant watershed issues in the Ventura Coastal Watershed Management Area for the wetlands and coastal waters are:

- Historic pesticide contamination;
- Loss of quality habitat;
- Impacts from oil spills and agriculture;
- Use by endangered species; and
- Impairments: from historic pesticides and from coliform.

Pursuant to this Regional Board's Watershed Initiative Chapter January 2000, the Ventura River Watershed and Ventura Coastal areas are targeted for the 2001-2002 fiscal year.

22. **Executive Order D-22-01.** On February 8, 2001, the State and Regional Boards received the Governor's Executive Order D-22-01 concerning the California electricity supply shortage that requires that all existing power plants increase their generation output. The Governor's Executive Order provides, in part, that "power plants in the State of California are not precluded from operating as a result of thermal limits in waste discharge requirements."

This permit is consistent with the Governor's Executive Order D-22-01 to responsibly address the energy emergency and is consistent with the objectives of environmental protection.

Applicable Water Quality Objectives

23. 40 CFR Part 122.44(d)vi(A) requires the establishment of numeric effluent limitations to attain and maintain applicable narrative water quality criteria to protect the designated beneficial uses.

24. Effluent limitations established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality-Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 304 (Information and Guidelines), and 402 (NPDES) of the Federal Clean Water Act and amendments thereto, are applicable to the discharges herein.

25. Total residual chlorine (TRC) levels in the once-though cooling water have exceeded effluent limitations based on 40 CFR Part 423 guideline (0.20 mg/L) and the 1983 Ocean Plan objectives for Discharge Serial No. 001 The current Ocean Plan objectives for TRC are more stringent. However, chlorination bioassay studies performed by the Discharger showed no significant adverse impact on the receiving waters as a result of the chlorine levels in the discharge.

In September 1984, the Discharger submitted a request for variance from the effluent residual chlorine limitation based on Ocean Plan objectives. The Regional Board and the State Board approved the variance request (Resolution 88-80) and forwarded it to the USEPA in August 1988 for concurrence, pursuant to Section 301(g) of the Clean Water Act.

In 1987, the Discharger and the City of Los Angeles Department of Water and Power conducted a chlorine toxicity screening study at three power plants which were determined to be representative of discharge conditions. The study was completed in response to State Board's concerns prior to the issuance of State Board's Resolution 88-80. It showed that chlorine was not detected outside the zone of initial dilution during a chlorination event.

26. On May 23, 1996, USEPA approved Mandalay's request for a variance from BAT (best available technology economically achievable) for TRC pursuant to Section 301(g) of the CWA with the following conditions:

a. The effluent from Outfall 001 must meet a limitation of 0.365 mg/L total residual chlorine (instantaneous maximum) based on daily sampling at Outfall 001 during periods of chlorination.

b. The effluent from Outfall 001 must meet a chronic toxicity limit of 3.6 TU_c (daily maximum). The chronic toxicity tests must be representative of actual discharge conditions (at a minimum) or of the PMEL (Proposed Modified Effluent Limitation) conditions. This means that, at a minimum, the effluent samples must be chlorinated in the laboratory to levels consistent with the maximum TRC effluent concentration measured during periods of chlorination during the previous 3 months. Alternatively, the sample may be chlorinated to the PMEL concentration (unless the maximum TRC concentration from the previous 3 months exceeds the PMEL concentration). All other procedures shall be consistent with monitoring requirements in the Ocean Plan and NPDES permit. This requirement to chlorinate in the laboratory applies only if the recorded TRC concentrations exceed the BAT limit of 0.2 mg/L during the previous 3 months.

c. In the event the effluent chronic toxicity limitation is exceeded, the Discharger shall increase the monitoring frequency to monthly in accordance with the NPDES permit. If the limit is exceeded again during the accelerated monitoring period, the Discharger shall conduct a Toxicity Reduction Evaluation (TRE) to determine the cause of toxicity. The TRE shall be conducted in accordance with EPA's most recent TRE/ toxicity investigation evaluation (TIE) manuals.

d. The Discharger shall conduct a residual chlorine receiving water study, as set forth in the NPDES permit, in order to assess the impact of chlorine and chlorine by-products within the receiving waters during period of maximum chlorination.

e. This 301(g) approval can be reviewed and revised by EPA at any time if subsequent information indicates that the PMEL will not result in compliance with all 301(g) criteria. This includes subsequent chronic toxicity results, TRE findings that indicate that the discharge of TRC at concentrations greater than the BAT limit results in toxicity, and receiving water data.

27. Per the December 5, 1994, NPDES permit (Footnote No. 3, Item II.A.1., Monitoring and Reporting Program CI-2093), the Discharger conducted a "Chlorine Sampling Optimization

Study" for Mandalay. The study determined the time during the chlorination cycle of peak residual chlorine concentration in the ocean discharge of the generating station. The purpose of this determination was to ensure that compliance monitoring samples for TRC were collected at the time of highest chlorine level in the stations' combined effluent.

Chlorination at Mandalay depends on the time of year. Between March and October, each condenser half is chlorinated for ten minutes each time and three times per day. The halves are chlorinated one at a time, and an interval of several minutes occurs between the end of chlorine injection to one half and the start to the next half. Once the condensers have been chlorinated, Units 1 & 2, and 3 bearing cooling water heat exchangers are chlorinated for ten minutes each. Between November and February, the condenser halves and bearing cooling water heat exchangers are chlorinated for ten minutes twice a day.

The test was performed on February 17, 1995. The results showed four distinct peaks that corresponded to the chlorination of each condenser half. The highest chlorine level was noted at forty-four (44) minutes after the start of the chlorination cycle. The Discharger used the result of this study to modify their sampling procedures to ensure that the samples are collected at or near the time of peak chlorine levels in the effluent.

In the spring of 2000, Mandalay Generating Station started repairs to the chlorinating system. After completion of the repairs, a profile test was performed on September 14, 2000. The results showed six distinct plateaus that correspond to the chlorinating of each condenser half and the two bearing cooling systems. The highest chlorine level is noted six minutes after the start of each respective chlorination cycle. The plateau lasts for about seven minutes. The Discharger has modified the sampling procedures to ensure that samples are collected during peak chlorine levels.

28. Prior to exercising the 301(g) variance the Discharger conducted a *Special Chlorine Study for 301(g) Variances*. The study was completed instead of a study required in Monitoring and Reporting Program No. 2093 Section III. F., which required that the Discharger conduct a study to demonstrate that there is no significant impact on the receiving water as a result of the discharge of higher levels of chlorine granted by the variance.

In a letter dated October 10, 1997, to the Regional Board, the Discharger discussed the results of a chronic toxicity test. Effluent samples were spiked with the BAT level (0.2 mg/L) and the maximum chlorine levels allowed by the 301(g) variance (0.365 mg/L) in the laboratory. The results indicated that discharge of chlorine at the maximum allowed 301(g) variance level would not cause chronic toxicity of the effluent to exceed permitted effluent limits. The Discharger indicated that the results of this investigation suggested that an additional receiving water study on the effects of chlorine discharges at the variance level was not necessary.

Between October 1996 and September 1997, Mandalay exceeded the BAT level for chlorine and exercised the variance on 2 days. It was not possible to complete a receiving water chlorine study at the variance levels since the chlorine level only exceeded the BAT

level infrequently. The chlorine studies completed by Southern California Edison were reviewed and verbally accepted by Regional Board staff.

29. The Discharger also completed a study of the concentrations of chlorine measured in the receiving waters during chlorination. The investigation was completed for Southern California Edison Company and Los Angeles Department of Water and Power. Nine generating stations were grouped according to discharge characteristics and one candidate from each group was chosen for the study. Scattergood Generating Station was chosen as the station representative of the open coastal discharge. Hence, the results from the study at Scattergood were used as a model to characterize chlorine concentrations in the receiving waters at Mandalay; also considered an open coastal discharge.

    Total chlorine, when detected, was always within the zone of initial dilution during a chlorination event.

30. Effluent limitations based on Ocean Plan objectives were calculated using a minimum dilution ration (i.e., parts sea water to one part effluent) of 2.6 to 1 for Discharge Serial No. 001. This ratio is based on calculations made by the State Water Resources Control Board (State Board) using standard dilution models and transmitted to the Regional Board in the State Board memorandum dated February 4, 1985.

31. For toxic constituents regulated in the Ocean Plan (Table B) that the Discharger does not add into or produce in the treatment process and/or waste streams, no numerical limits are prescribed. Also, no numerical limits are prescribed for toxic constituents which are added but usage has been determined that there is very low probability of causing or contributing to excursion in the water quality standards. However, a narrative limit to comply with all Ocean Plan objectives is provided. The Discharger is also required to monitor for all priority pollutants once during the term of the permit.

32. Acute toxicity monitoring conducted from February 1990 to November 1994 demonstrated consistent compliance with the Ocean Plan objectives. Hence, no numerical limits are prescribed for acute toxicity; the constituent is covered with a narrative limit to comply with all Ocean Plan objectives provided.

33. The requirements contained in this Order are based on the Basin Plan, the Ocean Plan, USEPA National Recommended Water Quality Criteria, other applicable Federal and State plans, policies, guidelines, and best professional judgement, and, as they are met, will be in conformance with the goals of the aforementioned water quality control plans and will protect and maintain existing beneficial uses of the receiving water.

34. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition to the State Board. A petition must be sent to the State Water Resources Control Board, P.O. Box 100, 901 P. Street, Sacramento, CA 95812, within 30 days of adoption of this Order.

35. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) in accordance with Water Code Section 13389.

The Regional Board has notified the Discharger and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.

This Order shall serve as a NPDES permit pursuant to Section 402 of the Federal Clean Water Act or amendments thereto, and shall take effect at the end of ten days from the date of its adoption, provided the Regional Administrator, USEPA, has no objections.

IT IS HEREBY ORDERED Reliant Energy, Inc. (Mandalay), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

I. DISCHARGE LIMITATIONS

A. Effluent Limitations

1. Waste discharged shall be limited to those described in the findings only, as proposed.

2. The pH of wastes discharged shall at all times be within the range 6.0 to 9.0.

3. The temperature of the wastes discharged shall not exceed 106°F during normal operation of the facility. During heat treatment, the temperature of waste discharged shall not exceed 125°F except during adjustment of the recirculation gate at which time the temperature of wastes discharged shall not exceed 135°F. Temperature fluctuations during gate adjustment above 125°F shall not last for more than 30 minutes.

4. The discharge of an effluent from Discharge Serial No. 001 with constituents in excess of the following limits is prohibited:

		Discharge Limitations[1]	
Constituents	Units	30-Day Average	Daily Maximum
Arsenic	µg/L	21	107
	lbs/day	44.7	227.8

Constituents	Units	Discharge Limitations[1] 30-Day Average	Daily Maximum
Cadmium	µg/L	3.6	14.4
	lbs/day	7.7	30.7
Hexavalent chromium[2]	µg/L	7.2	28.8
	lbs/day	15.3	61.3
Copper	µg/L	5.6	38
	lbs/day	11.9	8.1
Lead	µg/L	7.2	28.8
	lbs/day	15.3	61.3
Mercury	µg/L	0.143	0.575
	lbs/day	0.3	1.22
Nickel	µg/L	18	72
	lbs/day	38.3	153
Selenium	µg/L	54	216
	lbs/day	115	460
Silver	µg/L	2.1	9.66
	lbs/day	4.5	20.6
Zinc	µg/L	51.2	267
	lbs/day	109	568
Chronic Toxicity[3]	TU_c	----	3.6
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269, California Code of Regulations.		

1 Concentration limits are based on Ocean Plan objectives using a dilution ration of 2.6 parts of seawater to 1 part effluent. The daily mass emission limits (in lbs per day) are determined using the tabulated concentration limits and the maximum permitted flow rate (255.3 mgd).

2 The Discharger has the option to meet the hexavalent chromium limitations with a total chromium analysis. However, if the total chromium level exceeds the hexavalent chromium limitation, it will be considered a violation unless an analysis has been made for hexavalent chromium in a replicate sample and the result is in compliance with the hexavalent chromium limits.

[3] The chronic toxicity of the effluent shall be expressed and reported in toxic units, where:

$$TU_C = 100/NOEC$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent concentration that causes no observable effect on a test organisms, as determined by the results of a critical life stage toxicity test.

Chronic toxicity of 100% effluent shall not exceed a daily maximum of 3.6 TU_C in a critical life stage test.

If the chronic toxicity of the effluent exceeds the daily maximum of 3.6 TU_C, the Discharger shall immediately implement accelerated chronic toxicity testing according to MRP No. 2093, Section III.B.4.b. If any three out of the initial test and the six accelerated tests results exceed 3.6 TU_C, the Discharger shall initiate a TIE and implement the Initial Investigation TRE Workplan, as specified in the following section of this Order (Section I.A.5).

The Discharger shall conduct chronic toxicity monitoring as specified in MRP No. 2093.

5. Preparation of an Initial Investigation TRE Workplan

The Discharger shall prepare and submit a copy of the Discharger's initial investigation TRE workplan to the Executive Officer of the Regional Board for approval within 90 days of the effective date of this permit. If the Regional Board Executive Officer does not disapprove the workplan within 60 days, the workplan shall become effective. The Discharger shall use USEPA manuals EPA/600/2-88/070 (industrial) or EPA/833B-99/002 (municipal) as guidance. This workplan shall describe the steps the Discharger intends to follow if toxicity is detected, and should include, at a minimum:

a. A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency;

b. A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in the operation of the facility; and,

c. If a TIE is necessary, an indication of the person who would conduct the TIE (i.e., an in-house expert or an outside contractor). See MRP No. 2093, Section III.B.4.a.ii for the guidance manuals.

6. The wastes discharged from Discharge Serial No. 001 with concentration in excess of the following effluent limits are prohibited:

Constituents	Units	Discharge Limitations[4] 30-Day Average	Daily Maximum
Total residual chlorine[5,6]	mg/L	----	0.365
	lbs/day		777
Free available chlorine	mg/L	0.2	0.5
	lbs/day	426	1,065

[4] The daily mass emission limits (lbs/day) is determined using the tabulated concentration limits and the permitted maximum flow (255.3 mgd). For daily discharges where the total flow is not equal to the maximum permitted flow the mass emission limits shall be determined using the following equation:

Mass (lbs/day) = concentration (mg/L) * 8.34 * flow (million gallons per day)

[5] Based on the USEPA approved variance from BAT for TRC pursuant to Section 301(g) of the CWA based on daily sampling at Discharge Serial No. 001 during periods of chlorination. The USEPA and State Board approved Ocean Plan Exception utilized a minimum initial dilution of 2.6. Total residual chlorine may not be discharged from any single generating unit for more than 10 minutes per condenser half per shift.

[6] If other oxidants are used, this shall be the total oxidants reported as residual chlorine.

7. Effluent Limitations for In-plant Waste Streams:

a. The discharge of metal cleaning wastes[7] with constituents in excess of the following limits is prohibited:

Constituents	Units	Discharge Limitations[8] 30-Day Average	Daily Maximum
Suspended solids	mg/L	30	100
	lbs/day	20	66.7
Oil and grease	mg/L	15	20
	lbs/day	10	13.3
Copper, total	mg/L	1.0	1.0
	lbs/day	0.67	0.67
Iron, total	mg/L	1.0	1.0
	lbs/day	0.67	0.67

[7] Metal cleaning wastes shall mean any wastewater resulting from chemical cleaning of any metal process equipment including, but not limited to, boiler tube, boiler fireside, and air preheaters.

[8] The daily mass emission limits (in lbs/day) has been determined using the tabulated concentration limits and the flow rate for inplant wastes (0.08 mgd).

b. The discharge of low volume wastes[9] with constituents in excess of the following limits is prohibited:

		Discharge Limitations[10]	
Constituents	Units	30-Day Average	Daily Maximum
Suspended solids	mg/L	30	100
	lbs/day	43	143
Oil and grease	mg/L	15	20
	lbs/day	21.5	28.7

[9] Low volume wastes includes softener regeneration wastes, fireside and air preheater washes, floor drains, boiler blowdown and evaporator blowdown wastes.

[10] The daily mass emission limits (in lbs/day) has been determined using the tabulated concentration limits and reported flow rate for low volume wastes (0.172 mgd).

c. In the event that waste stream from various sources (6-a and 6-b) are combined for treatment or discharge, the quantity of each pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

B. Receiving Water Limitations

1. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Board, but including all kelp beds, the following bacterial objectives throughout the water column shall be maintained:

   a. Samples of water from each sampling station shall have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml) provided that not more than 20 percent of the samples at any sampling station in any 30-day period may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml).

   b. The fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.

2. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives throughout the water column shall not be exceeded:

   The median total coliform density shall not exceed 70 per 100 ml, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

3. If a receiving water monitoring location consistently exceeds a coliform objective or exceeds a geometric mean enterococcus density of 24 organisms per 100 ml for a 30-day period or 12 organisms per 100 ml for a six-month period, the Discharger shall conduct a sanitary survey to determine if the discharge is the source of the contamination.

4. Floating particulates and grease and oil shall not be visible as a result of wastes discharged.

5. Wastes discharged shall not cause aesthetically undesirable discoloration of the ocean surface (receiving waters).

6. Wastes discharged shall not cause the transmittance of natural light to be significantly reduced at any point outside the initial dilution zone.

7. The rate of deposition and the characteristics of inert solids in ocean sediments shall not be altered such that benthic communities are degraded as a result of wastes discharged.

8. The dissolved oxygen concentration shall not be depressed more than 10 percent from that which occurs naturally as the result of the discharge of oxygen demanding waste materials.

9. The pH of the receiving water shall not be changed at any time more than 0.2 units from that which occurs naturally.

10. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.

11. The wastes discharged shall not increase the concentration in marine sediments of toxic substances listed in Chapter IV, Table B of the Ocean Plan, to levels that would degrade indigenous biota.

12. The concentration of organic materials in marine sediments shall not be increased to levels that would degrade marine life as a result of waste discharged.

13. Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota as a result of waste discharged.

14. Waste discharged shall not degrade marine communities, including vertebrate, invertebrate, and plant species.

15. Waste discharged shall not alter the natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption.

16. The concentration of organic material in fish, shellfish or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health as a result of waste discharged

17. The wastes discharged shall not cause receiving waters to contain any substance in concentrations toxic to human, animal, plant, or fish life.

18. No physical evidence of wastes discharged shall be visible at any time in the water on the shores, rocks or structures.

19. The salinity of the receiving waters shall not be changed by the wastes discharged to an extent such as to be harmful to marine biota.

20. The wastes discharged shall not contain individual pesticides or a combination of pesticides in concentrations that adversely affect beneficial uses.

II. REQUIREMENTS AND PROVISIONS

A. Discharge of any unpermitted wastes to any point other than specifically described in this Order and permit is prohibited and constitutes a violation thereof.

B. This Order includes the attached Monitoring and Reporting Program (Attachment T). If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the Monitoring and Reporting Program prevail.

C. This Order includes the attached *Standard Provisions and General Monitoring and Reporting Requirements* (Standard Provisions) (Attachment N). If there is any conflict between provisions stated hereinbefore and the attached Standard Provisions, those provisions attached herein prevail.

D. The Discharger must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to storm drain systems or other water courses under their jurisdiction; including applicable requirements in municipal storm water management program developed to comply with NPDES permits issued by the Regional Board to local agencies.

E. The Discharger shall comply with all Ocean Plan objectives.

F. The Discharger shall comply with all applicable effluent limitations, national standards of performance, toxic effluent standards, and all federal regulations established pursuant to Sections 301, 302, 303(d), 304, 306, 307, 316, and 423 of the Federal Clean Water Act and amendments thereto.

G. In the determination of compliance with the monthly average limitations, the following provisions shall apply to all constituents:

1. If the analytical result of a single sample, monitored monthly or at a lesser frequency, does not exceed the monthly average limit for that constituent, the Discharger will have demonstrated compliance with the monthly average limit for that month.

2. If the analytical result of a single sample, monitored monthly or at a lesser frequency, exceeds the monthly average limit for any constituent, the Discharger shall collect three additional samples at approximately equal intervals during the month. All four analytical results shall be reported in the monitoring report for that month, or 45 days after the sample was obtained, whichever is later.

   If the numerical average of the analytical result of these four samples does not exceed the monthly average limit for that constituent, compliance with the monthly average limit has been demonstrated for that month. Otherwise, the monthly average limit has been violated.

3. If Item II.G.2. has not been implemented, and the result of one sample (Item II.G.1.) exceeds the monthly average, then the Discharger is in violation of the monthly average limit.

4. In the event of noncompliance with a monthly average effluent limitation, the sampling frequency for that constituent shall be increased to weekly and shall continue at this level until compliance with the monthly average effluent limitation has been demonstrated.

H. The Discharger shall comply with all applicable requirements, such as the Storm Water Pollution Prevention Plan (SWPPP) updates and Monitoring and Reporting Program, of State Board's general permit for *Discharges of Storm Water Associated with Industrial Activities* (State Water Resources Control Board Order No. 97-03-DWQ adopted on April 17, 1997).

I. The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to waters of the United States is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. Discharge of chlorine for disinfection in plant potable and service water systems and in sewage treatment is authorized.

J. The discharge of any waste resulting from the combustion of toxic or hazardous wastes to any waste stream which ultimately discharges to waters of the United States is prohibited, unless specifically authorized elsewhere in this permit.

K. There shall be no discharge of polychlorinated biphenyl compounds such as those once commonly used for transformer fluid.

L. The Discharger shall notify the Executive Officer in writing no later than six months prior to planned discharge of any chemical, other than chlorine or other product previously reported to the Executive Officer, which may be toxic to aquatic life. Such notification shall include:

a. Name and general composition of the chemical,
b. Frequency of use,
c. Quantities to be used,
d. Proposed discharge concentrations, and
e. USEPA registration number, if applicable.

No discharge of such chemical shall be made prior to the Executive Officer's approval.

M. The Regional Board and USEPA shall be notified immediately by telephone, of the presence of adverse conditions in the receiving waters or on beaches and shores as a result of wastes discharged; written confirmation shall follow as soon as possible but not later than five working days after occurrence.

N. This Order may be modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR Parts 122.44, 122.62, 122.63, 122.64, 125.62, and 125.64. Causes for taking such actions include, but are not limited to: failure to comply with any condition of this order and permit, endangerment to human health or the environment resulting from the permitted activity; or acquisition of newly obtained information which would have justified the application of different conditions if known at the time of Order adoption and issuance.

The filing of a request by the Discharger for an order and permit modification, revocation and issuance, or termination; or notification of planned changes or anticipated noncompliances does not stay any condition of this order and permit.

O. This Order may also be modified, in accordance with the provisions set forth in 40 CFR Part 122 and 124, to include requirements for the implementation of the watershed protection management approach.

III. EXPIRATION DATE

This Order expires on March 10, 2006.

The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of the expiration date as application for issuance of new waste discharge requirements.

IV. RESCISSION

Order No. 94-131, adopted by this Board on December 5, 1994, is hereby rescinded, except for enforcement purposes.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on April 26, 2001.

Dennis A. Dickerson
Executive Officer

/ CDO

Figure 1
LOCATION MAP
MANDALAY GENERATING STATION
Oxnard, Ventura County, CA

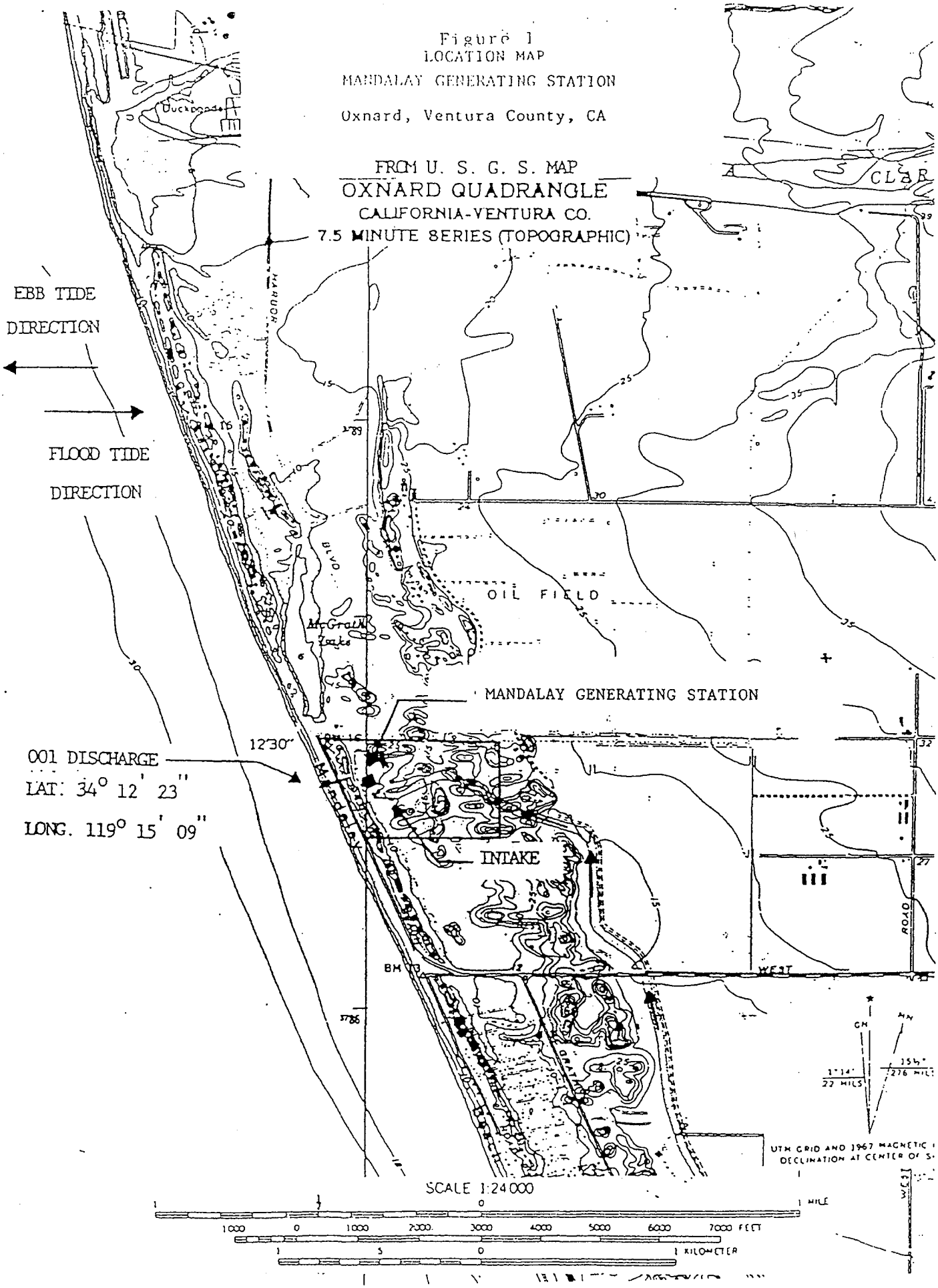
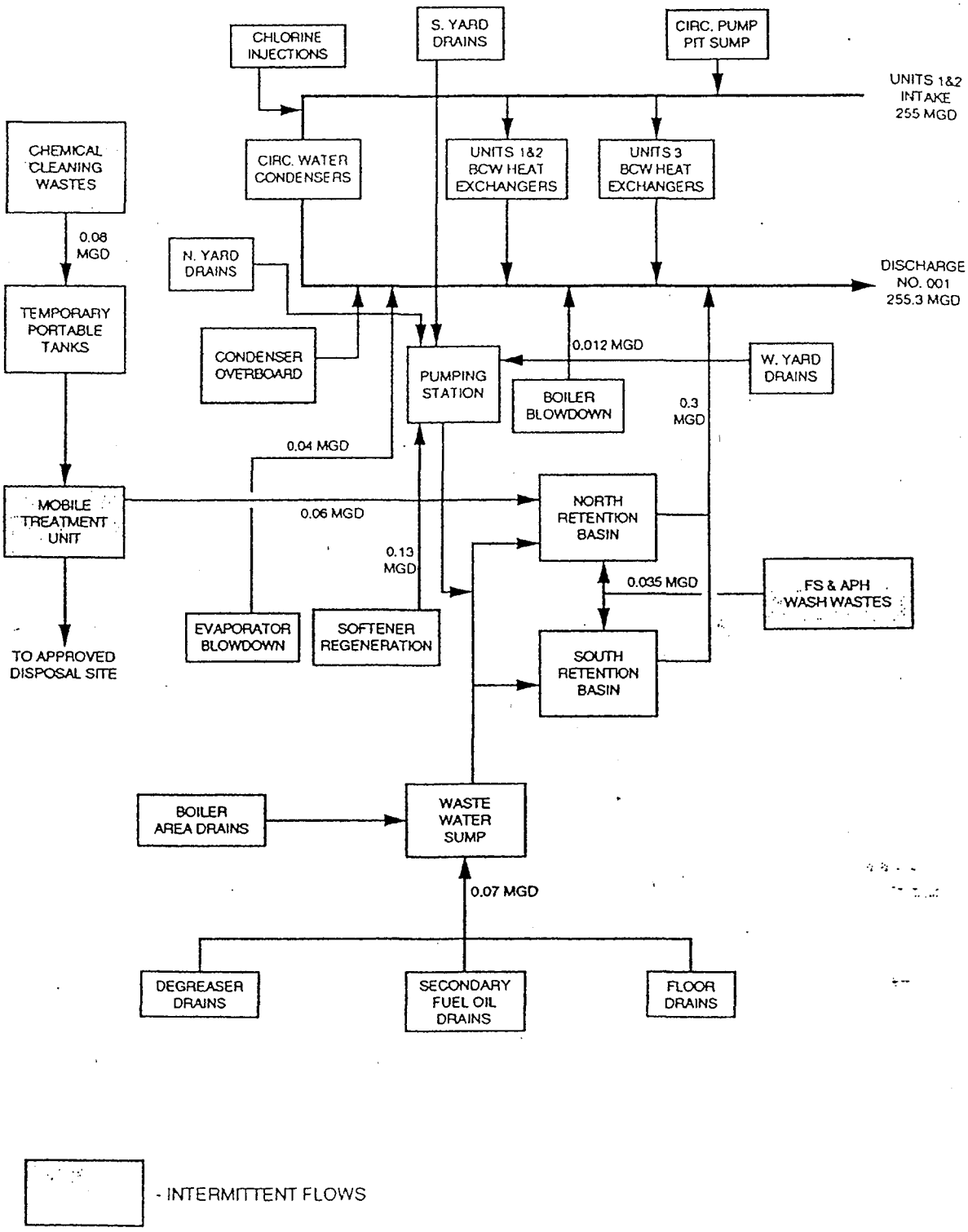


Figure 2
SCHEMATIC OF WATER FLOW

Mandalay Generating Station
OXNARD, CALIFORNIA
DECEMBER, 1998



State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI - 2093
for
RELIANT ENERGY INCORPORATED, INC.
(CA0001180)

I. REPORTING REQUIREMENTS

A. The Discharger shall implement this monitoring program on the effective date of this Order. Effluent monitoring reports shall be submitted monthly, by the first day of the second month following each monthly sampling period. The first monitoring report shall be received the Regional Board by July 1, 2001, covering May 2001.

B. Quarterly effluent analyses shall be performed during the months of February, May, August and November. Semiannual effluent analyses shall be performed during the months of May and November. Annual effluent analyses shall be performed during the month of May. Results of quarterly, semiannual, and annual analyses shall be reported in the appropriate monthly monitoring report following the analyses. Should there be instances when monitoring could not be done during these specified months, the Discharger must notify the Regional Board, state the reason, and obtain approval for an alternate schedule.

C. By March 1 of each year, the Discharger shall submit an annual summary report to the Regional Board. The report shall contain a discussion, tabular, and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the Discharger shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements. The data shall be submitted to the Regional Board on hard copy and on 3 ½" computer diskette. The submitted data must be IBM compatible, preferably using Microsoft Excel software.

D. All monitoring and annual summary reports must be addressed to the Regional Board, Attention: Information Technology Unit. Reference the reports to Compliance File No. CI-2093 to facilitate routing to the appropriate staff and file.

E. For every item where the requirements are not met, the Discharger shall submit a statement of the cause(s), and actions undertaken or proposed which will bring the discharge into full compliance with waste discharge requirements at the earliest possible time, including a timetable for implementation of these actions.

F. Any mitigation/remedial activity including any pre-discharge treatment conducted at the site must be reported in the quarterly monitoring report.

G. Database Management System – The Regional Board is developing a compliance monitoring database management system that may require the Discharger to submit the monitoring and annual reports electronically when it becomes fully operational.

II. EFFLUENT MONITORING REQUIREMENTS

A. Sampling station(s) shall be established for the point of discharge and shall be located where representative samples of that effluent can be obtained. Provisions shall be made to enable visual inspection before discharge. If oil sheen, debris, and/or other objectionable materials or odors are present, the discharge shall not be commenced until compliance with the requirements has been demonstrated. All visual observations shall be included in the monitoring report.

B. This Regional Board shall be notified in writing of any change in the sampling stations once established, or in the methods for determining the quantities of pollutants in the individual waste streams.

C. Pollutants shall be analyzed using the methods described in 40 CFR 136.3, 136.4, and 136.5 (revised May 14, 1999); or where no methods are specified for a given pollutant, methods approved by Regional Board or State Board. Laboratories analyzing monitoring samples shall be certified by the California Department of Health Services and must include quality assurance/quality control (QA/QC) data with their report.

The monitoring report shall specify the USEPA analytical method used, the Method Detection Limit (MDL) and the Minimum Level (ML) for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported by one of the following methods, as appropriate:

1. An actual numerical value for sample results greater than, or equal to, the ML; or,

2. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML; or,

3. "Not-Detected (ND)" for sample results less than the laboratory's MDL with MDL indicated for the analytical method used.

Current MLs (Attachment T-1) are those published by the State Water Resources Control Board in the *Policy for the Implementation of Toxics*

Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, March 2, 2000.

D. Where possible, the MLs employed for effluent analyses shall be lower than the permit limits established for a given parameter. If the ML value is not below the effluent limitation, then the lowest ML value and its associated analytical method shall be selected for compliance purposes. At least once a year (in the annual report), the Discharger shall submit a list of the analytical methods employed for each test and associated laboratory quality assurance/quality control (QA/QC) procedures.

The Regional Board, in consultation with the State Board Quality Assurance Program, shall establish an ML that is not contained in Attachment T-1 to be included in the Discharger's permit in any of the following situations:

1. When the pollutant under consideration is not included in Attachment T-1;

2. When the Discharger and Regional Board agree to include in the permit a test method that is more sensitive than those specified in 40 CFR 136 (revised May 14, 1999);

3. When the Discharger agrees to use an ML that is lower than that listed in Attachment T-1;

4. When a Discharger demonstrates that the calibration standard matrix is sufficiently different from that used to establish the ML in Attachment T-1 and proposes an appropriate ML for their matrix; or,

5. When the Discharger uses a method whose quantification practices are not consistent with the definition of an ML. Examples of such methods are the USEPA-approved Method 1613 for dioxins and furans, Method 1624 for volatile organic substances, and Method 1625 for semi-volatile organic substances. In such cases, the Discharger, the Regional Board, and the State Board shall agree on a lowest quantifiable limit, and that limit will substitute for the ML for reporting and compliance determination purposes.

H. Laboratory analyses – all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP). A copy of the laboratory certification shall be submitted with the Annual Report.

E. Water/wastewater samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All QA/QC samples must be run on the same

dates the samples were actually analyzed, and the results must be reported in the Regional Board format if available, and submitted with the laboratory reports.

F. All analyses shall be accompanied by the chain of custody, including but not limited to data and time of sampling, sample identification, and name of person who performed sampling, date of analysis, name of person who performed analysis, QA/QC data, method detection limits, analytical methods, copy of laboratory certification, and a perjury statement executed by the person responsible for the laboratory.

G. Each monitoring report must affirm in writing that: "All analyses were conducted at a laboratory certified for such analyses by the California Department of Health Services, and in accordance with current USEPA guideline procedures or as specified in this Monitoring Program."

H. Each report shall contain the following completed declaration:

"I declare under penalty of law that I have personally examined, and am familiar with, the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. [CWC Sections 13263, 13267, and 13268]".

Executed on the _____day of _____at_____.

_____(Signature)
_____(Title)

III. EFFLUENT MONITORING PROGRAM

A. The following shall constitute the effluent monitoring program for the final effluent at Discharge No. 001:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Total waste flow[1]	gal/day	----	daily
Temperature[1]	°F	continuous	----
pH	pH units	grab	weekly
Total residual chlorine[2]	mg/L	grab[3]	daily
Free available chlorine[2]	mg/L	grab[3]	daily
Chronic toxicity	TU_c	grab	quarterly
Fecal coliform	MPN/100ml	grab	guarterly
Total coliform	MPN/100ml	grab	quarterly
Enterococci	MPN/100ml	grab	quarterly
Ammonia nitrogen	µg/L	grab	annually
Nitrate nitrogen	mg/L	grab	annually
Radioactivity[4]	pCi/ml	grab	annually
Acute toxicity	TU_a	grab	annually
Priority Pollutants	µg/L	grab	annually[5]

1 Where continuous monitoring of temperature, and flow is required, the following shall be included in the report:

Temperature: Only the maximum temperature for each calendar day shall be reported, except when temperatures exceed 106°F, in which case the reason(s), time of day, and duration of such events shall also be reported.

Flow: Total daily flow.

2 Monitoring is only applicable during periods of chlorine addition. A statement certifying that chlorination did not occur during the day may be submitted in lieu of an analysis

3 Multiple grab samples, with at least four equally spaced samples during each hour of chlorine addition, the maximum and average concentrations on the duration of chlorine addition shall be reported. Alternatively, a single grab sample may be collected at the time of peak residual chlorine concentration.

4 Radioactivity determinations of gross and net beta activity, in picocuries per liter, shall be made within 48 hours following preparation of samples. The overall efficiency of the counting system, size of sample, and counting time shall be such that radioactivity can be determined to a sensitivity of ten picocurie per liter with a 95% confidence limit not to exceed 50 percent.

A statement certifying that radioactive pollutants were not added to the discharge may be submitted in lieu of monitoring.

5 Sampling and analysis shall be completed annually. Analysis should include priority pollutants listed on page T-23 except metals listed in Section III.C.

B. Chronic Toxicity Effluent Monitoring Requirements

1. The Discharger shall conduct critical life stage chronic toxicity tests on 24-hour composite 100% effluent samples or receiving water samples in accordance with USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Third Edition, July 1994, (EPA/600/4-91/002) or USEPA's *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, August 1995, (EPA/600/R-95/136).

2. Effluent samples shall be collected after all treatment processes and before discharge to the receiving water. Receiving water samples shall be collected in accordance with the conditions specified in this MRP. Receiving water samples shall be collected at mid-depth.

3. Marine and Estuarine

   a. The Discharger shall conduct tests as follows: with a vertebrate, an invertebrate, and an alga for the first three suites of tests. After the screening period, monitoring shall be conducted using the most sensitive species.

   b. Re-screening is required every 15 months. The Discharger shall re-screen with the three species listed above and continue to monitor with the most sensitive species. If the first suite of re-screening tests demonstrate that the same species is the most sensitive than the re-screening does not need to include more that one suite of tests. If a different species is the most sensitive or if there is ambiguity then the discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five suites.

   c. The presence of chronic toxicity shall be estimated as specified using West Coast marine organisms according to EPA' s Short-Term Methods for Estimating Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms, August, 1995 (EPA/600/R-95/136)

4. Additional Requirements for Chronic Toxicity Monitoring Programs

   a. Quality Assurance

i. Concurrent testing with a reference toxicant shall be conducted. Reference toxicant tests shall be conducted using the same test conditions as the effluent toxicity tests (e.g., same test duration, etc).

ii. If either the reference toxicant test or effluent test does not meet all test acceptability criteria (TAC) as specified in the test methods manuals (EPA/600/4-91/002 and EPA/600/R-95/136), then the Discharger must re-sample and re-test within 14 days.

iii. Control and dilution water should be receiving water or laboratory water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control using culture water shall be used.

b. Accelerated Monitoring

i. If toxicity is detected as defined in Order No. 01-057, Sections I.A.4, then the Discharger shall conduct six additional tests, approximately every 7 days, over a six-week period. The samples shall be collected and the tests initiated no less than 7 days apart. The Discharger shall ensure that they receive results of a failing acute toxicity test within 24 hours of completion of the test and the additional tests shall begin within 3 business days of receipt of the result.

ii. If any three out of the initial test and the six additional tests results exceed 3.6 TU_c, the Discharger shall immediately implement the Initial Investigation Toxicity Reduction Evaluation (TRE) Workplan.

iii. If implementation of the Initial Investigation TRE Workplan indicates the source of toxicity (e.g., a temporary plant upset, etc.), then the Discharger shall return to the normal sampling frequency required in Section III.A of this MRP.

iv. If toxicity is not detected in any of the six additional tests required above, then the Discharger shall return to the normal sampling frequency required in Section III.A of this MRP.

v. If a TRE/Toxicity Identification Evaluation (TIE) is initiated prior to completion of the accelerated testing schedule required by Section III.B.4.b of this MRP, then the accelerated testing schedule may be terminated, or used as necessary in performing the TRE/TIE, as determined by the Executive Officer.

vi. The Discharger shall obtain six (6) consecutive chronic toxicity results less than or equal to 3.6 TU_c in order to return to the normal sampling frequency required in Section III.A of this MRP.

c. Steps in TRE and TIE

i. Following a TRE trigger, the Discharger shall initiate a TRE in accordance with the facility's initial investigation TRE workplan. At a minimum, the Discharger shall use USEPA manuals EPA/600/2-88/070 (industrial) or EPA/833B-99/002 (municipal) as guidance. The Discharger shall expeditiously develop a more detailed TRE workplan for submittal to the Executive Officer within 15 days of the trigger that will include, but not be limited to:

(a) Further actions to investigate and identify the cause of toxicity;

(b) Actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity;

(c) Standards the Discharger will apply to consider the TRE complete and to return to normal sampling frequency; and,

(d) A schedule for these actions.

ii. The following is a stepwise approach in conducting the TRE:

(a) Step 1 includes basic data collection. Data collected as part of the accelerated monitoring requirement may be used to conduct the TRE;

(b) Step 2 evaluates the optimization of the treatment system operation, facility housekeeping, and the selection and use of in-plant process chemicals;

(c) If Steps 1 and 2 are unsuccessful, Step 3 implements the TIE employing all reasonable efforts and using currently available TIE methodologies. The objective of the TIE is to identify the substance or combination of substances causing the observed toxicity;

(d) Assuming successful identification or characterization of the toxicant(s), Step 4 evaluates final effluent treatment options;

(e) Step 5 evaluates in-plant treatment options; and

(f) Step 6 consists of confirmation once a toxicity control method has been implemented.

Many recommended TRE elements parallel source control, pollution prevention, and storm water control program best management practices (BMPs). To prevent duplication of efforts, evidence of implementation of these control measures may be sufficient to comply with the TRE requirements. By requiring that the first steps of a TRE be accelerated testing and review of the facility's TRE workplan, a TRE may be ended in its early stages. All reasonable steps shall be taken to reduce toxicity to the required level. The TRE may be ended at any stage if monitoring finds there is no longer toxicity (or six consecutive chronic toxicity results are less than or equal to 3.6 TU_c).

iii. The Discharger may initiate a TIE as part of the TRE process to identify the cause(s) of toxicity. The Discharger shall use the USEPA acute and chronic manuals, EPA/600/6-91/005F (Phase I), EPA/600/R-96-054 (for marine), EPA/600/R-92/080 (Phase II), and EPA-600/R-92/081 (Phase III) as guidance.

iv. If a TRE/TIE is initiated prior to completion of the accelerated testing schedule required by Section III.B.4.b of this MRP, then the accelerated testing schedule may be terminated, or used as necessary in performing the TRE/TIE, as determined by the Executive Officer.

v. Toxicity tests conducted as part of a TRE/TIE may also be used for compliance, if appropriate.

vi. The Board recognizes that toxicity may be episodic and identification of causes of and reduction of sources of toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

d. Reporting

i. The Discharger shall submit a full report of the toxicity test results, including any accelerated testing conducted during the month as required by Section III.B.4.b of this MRP. Test results shall be reported in Toxicity Units (percent survival or TU_c) with the discharge monitoring reports (DMR) for the month in which the test is conducted.

If an initial investigation indicates the source of toxicity and accelerated testing is unnecessary, pursuant to Section III.B.4.b, then those results shall also be submitted with the DMR for the period in which the Investigation occurred.

ii. The full report shall be submitted on or before the end of the month the DMR is submitted.

iii. The full report shall consist of (1) the results; (2) the dates of sample collection, initiation, and completion of each toxicity test; and (3) the acute toxicity average limit or chronic toxicity limit or trigger as described in Section I.A.4 of Order No. 01-057.

iv. Test results for toxicity tests shall also be reported according to the appropriate manual chapter on Report Preparation and shall be attached to the DMR. Routine reporting shall include, at a minimum, as applicable, for each test:

(a) sample date(s);
(b) test initiation date;
(c) test species;
(d) end point values for each dilution (e.g., number of young, growth rate, percent survival);
(e) NOEC value(s) in percent effluent;
(f) IC_{15}, IC_{25}, IC_{40} and IC_{50} values in percent effluent;

(g) TU_c values $\left(TU_c = \frac{100}{NOEC}\right)$

(h) Mean percent mortality (±standard deviation) after 96 hours in 100% effluent (if applicable);

(i) NOEC and LOEC values for reference toxicant test(s);

(j) IC_{25} value for reference toxicant test(s);

(k) Any applicable control charts; and,

(l) Available water quality measurements for each test (e.g., pH, D.O., temperature, conductivity, hardness, salinity, and ammonia).

v. The Discharger shall provide a compliance summary, which includes a summary table of toxicity data from at least eleven of the most recent samples.

vi. The Discharger shall notify, by telephone or electronically, this Regional Board of any toxicity exceedance of the limit or trigger within 24 hours of receipt of the results followed by a written report within 14 calendar days of receipt of the results. The verbal or electronic notification shall include the exceedance and the plan the Discharger will pursue. The written report shall describe actions the Discharger has taken or will take to investigate and correct the cause(s) of toxicity. It may also include a status report on any actions required by the permit, with a schedule for actions not yet completed. If no actions have been taken, the reasons shall be given.

C. Metals

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Antimony	µg/L	grab	semiannually
Arsenic	µg/L	grab	semiannually
Beryllium	µg/L	grab	semiannually
Cadmium	µg/L	grab	semiannually
Chromium	µg/L	grab	semiannually
Hexavalent chromium	µg/L	grab	semiannually
Copper	µg/L	grab	semiannually
Lead	µg/L	grab	semiannually
Mercury	µg/L	grab	semiannually

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Nickel	µg/L	grab	semiannually
Selenium	µg/L	grab	semiannually
Silver	µg/L	grab	semiannually
Thallium	µg/L	grab	semiannually
Zinc	µg/L	grab	semiannually

IV. EFFLUENT MONITORING PROGRAM FOR IN-PLANT WASTE STREAMS

A. Metal Cleaning Wastes:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Flow[5]	mgd	----	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Copper, total	mg/L	grab	monthly
Iron, total	mg/L	grab	monthly

[5] If no discharge occurred during the month, the report shall so state.

B. Non-Chemical Metal Cleaning Wastes:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Flow[6]	mgd	----	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Copper[7]	mg/L	grab	monthly
Iron[7]	mg/L	grab	monthly

[6] If no discharge occurred during the month, the report shall so state.
[7] Dissolved metal fraction only.

C. Low Volume Wastes:

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Flow[8]	mgd	----	monthly
pH	pH units	grab	monthly
Suspended solids	mg/L	grab	monthly
Oil and grease	mg/L	grab	monthly
Priority Pollutants	µg/L	grab	annually[9]

[8] If no discharge occurred during the month, the report shall so state.

[9] Sampling and analyses shall be on a quarterly basis during the first two years after adoption of this Order, and annually thereafter. Analysis for priority pollutants in low volume waste should include metals. See page T-23 for constituent list.

D. Intake Cooling Water Monitoring Program:

The intake cooling water shall be analyzed for metals semi-annually as listed in III.C. for a period of two years following the date of this permit. The sampling and analyses for both effluents and intake cooling water shall be performed at the same time. The Executive Officer has the authority to require continuation of such monitoring at his discretion.

V. RECEIVING WATER MONITORING

A. Receiving Water

1. Pursuant to the Code of Federal Regulations [40 CFR § 122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a NPDES permit must determine compliance with NPDES permit conditions, and demonstrate that State water quality standards are met.

2. Since compliance monitoring focuses on the effects of point source discharge, it is not designed to assess impacts from other sources of pollution (e.g., nonpoint source runoff, aerial fallout) nor to evaluate the current status of important ecological resources on a regional basis.

B. Regional Database

1. Several efforts are underway to develop and implement a comprehensive regional monitoring program for the Southern California Bight. These efforts

have the support and participation from regulatory agencies, dischargers, and environmental groups. The goal is to establish a regional program to address public health concerns, monitor trends in natural resources and nearshore habitats, and assess regional impacts from all contaminant sources.

2. Two pilot regional monitoring programs were conducted; one during the summer of 1994 and another in 1998. The purpose of the pilot programs were to test an alternative sampling design that combines elements of compliance monitoring with a broader regional assessment approach. The pilot program was designed by USEPA, the State Board, and three Boards (Los Angeles, Santa Ana, and San Diego) in conjunction with the Southern California Coastal Water Research Project and participating discharger agencies.

   The pilot regional monitoring programs included the following components: microbiology; water quality; sediment chemistry; sediment toxicity testing; benthic infauna; demersal fish; and bioaccumulation.

3. The two pilot regional monitoring programs were funded primarily, by resource exchanges with the participating discharger agencies. During the year when pilot regional monitoring was scheduled, USEPA and this Regional Board eliminated portions of the routine compliance monitoring programs for that year, while retaining certain critical compliance monitoring elements. A certain percentage of the traditional sampling sites were also retained to maintain continuity of the historical record and to allow comparison of different sampling designs. The exchanged resources were redirected to complete sampling within the regional monitoring program design. Thus, the Discharger's overall level of effort for the 1994 and 1998 pilot programs remained approximately the same as the compliance monitoring programs.

4. Given the apparent benefits realized by the first two regional monitoring programs, it is probable that similar comprehensive sampling efforts will be repeated for the California Bight at periodic intervals (perhaps every four or five years). At the present time, it appears likely that the next regional monitoring program will be attempted during the summer of 2002 - 2003.

5. We anticipate that future regional monitoring programs will be funded in a similar manner. Revisions to the routine compliance monitoring program will be made under the discretion of the USEPA and this Regional Board as necessary to accomplish this goal; and may include resource exchanges in the number of parameters to be monitored, the frequency of monitoring, or the number, type, and location of samples collected.

6. The compliance monitoring programs for the Mandalay Generating Station, and other major ocean dischargers will serve as the framework for the regional

monitoring program. However, substantial changes to these programs may be required to fulfill the goals of regional monitoring, while retaining the compliance monitoring component required to evaluate the potential impacts from NPDES discharges. Revisions to the existing program will be made under the discretion of the USEPA and this Regional Board as necessary to accomplish this goal; and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number, type, and location of samples collected.

C. Monitoring for Algicide Spraying

The Discharger periodically sprays the banks of the Mandalay Intake Canal with an algicide to control algal growth in the intake canal. The Discharger shall notify the Regional Board at least two weeks prior to each application of algicide. Water samples shall be collected at a minimum of three locations (Wooley Road, 5th Street and Unocal Bridge, or other locations subject to approval by the Executive Officer) and analyzed for total residual oxidant concentrations. The Discharger also shall conduct visual observations of the canal following algicide applications to assess the effectiveness of the spraying program in controlling algal growth and to observe any unusual mortality of fish or invertebrates. The Discharger shall report the results of sample analysis and visual observations, as well as a description of the amounts and locations of all algicide applications, in the appropriate monthly monitoring report to the Regional Board.

D. Receiving Water Monitoring

The receiving water monitoring program shall consist of periodic biological surveys of the area surrounding the discharge, and shall include studies of those physical-chemical characteristics of the receiving water which may be impacted by the discharge.

Location of Sampling Stations (see Attached Figure 1):

1. Receiving water stations in the surf zone shall be located as follows:

   a. Station RW1 - 1180 feet upcoast of the discharge channel.

   b. Station RW2 - 1180 feet downcoast of the discharge channel.

   c. Station RW3 - 2360 feet upcoast of the discharge channel.

   d. Station RW4 - 2360 feet downcoast of the discharge channel.

   e. Station RW5 - At the discharge channel.

2. Receiving water stations offshore of the discharge area shall be located as follows:

   a. Station RW6 - directly offshore of station RW13 at a depth of 30 feet.

   b. Station RW7 - directly offshore of station RW16 at a depth of 30 feet.

   c. Station RW8 – directly offshore of station RW11 at a depth of 30 feet.

   d. Station RW9 – directly offshore of station RW17 at a depth of 30 feet.

   e. Station RW10 – directly offshore of station RW12 at a depth of 30 feet.

   f. Station RW11 – directly offshore of station RW5 at a depth of 20 feet.

   g. Station RW12 – directly offshore of station RW4 at a depth of 20 feet.

   h. Station RW13 – directly offshore of station RW3 at a depth of 20 feet.

   i. Station RW14 – 5,910 feet downcoast of the discharge channel at a depth of 20 feet.

   j. Station RW15 – 5,910 feet upcoast of the discharge channel at a depth of of 20 feet.

   k. Station RW16 – directly offshore of station RW1 at a depth of 20 feet.

   l. Station RW17 – directly offshore of station RW2 at a depth of 20 feet.

3. Benthic stations shall be located as follows:

   a. Station B1 shall be located directly beneath Station RW11.

   b. Station B2 shall be located directly beneath Station RW12.

   c. Station B3 shall be located directly beneath Station RW13.

   d. Station B4 shall be located directly beneath Station RW14.

   e. Station B5 shall be located directly beneath Station RW15.

4. Trawling stations shall be located as follows:

   a. Station T1 – Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW15.

   b. Station T2 – Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW16.

   c. Station T3 – Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW17.

   d. Station T4 – Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW14.

E. Type and Frequency of Sampling:

1. Surface temperatures, dissolved oxygen levels and pH shall be measured semiannually (summer and winter) each year at Stations RW1 through RW5. All stations shall be sampled on both a flooding tide and an ebbing tide during each semiannual survey.

2. Temperature profiles shall be measured semiannually (summer and winter) each year at Stations RW6 through RW17 from surface to bottom at a minimum of one-meter intervals. Dissolved oxygen levels and pH shall be measured semiannually at least at the surface, mid-depth and bottom at each station. All stations shall be sampled on both a flooding tide and an ebbing tide during each semiannual survey.

3. Impingement sampling for fish and commercially important macroinvertebrates shall be conducted at least once every two months at intake Serial No. 002. Impingement sampling shall coincide with heat treatments for at least three of the six sampling events during the year.

   Fish and macroinvertebrates shall be identified to the lowest possible taxon. For each intake point, data reported shall include numerical abundance of each fish and macroinvertebrate species, wet weight of each species (when combined weight of individuals in each species exceeds 0.2 kg), number of individuals in each 1-centimeter size class (based on standard length) for each species and total number of species collected. When large numbers of given species are collected, length/weight data need only be recorded for 50 individuals and total number and total weight may be estimated based on aliquots samples. Total fish impinged per heat treatment or sampling event shall be reported and data shall be expressed per unit volume water entrained.

4. Native California mussels (Mytilus Californianus) shall be collected during the summer from the discharge conduit, as close to the point of discharge as possible, for bioaccumulation monitoring. The mussels shall be collected and analyzed as described in Appendix A of the *California State Mussel Watch Marine Water Quality Monitoring Program 1985-86* (Water Quality Monitoring Report No. 87-2WQ). Mussel tissue shall be analyzed for copper, chromium, nickel, and zinc at a minimum.

5. Sampling by otter trawl shall be conducted semiannually (summer and winter) each year along transects at Stations T1 through T4. Trawls are specialized gear used in large open water areas of reservoirs, lakes, large rivers, estuaries, and offshore marine areas. They are used to gain information on a particular species of fish rather than on overall fish populations. The otter trawl is used to capture near-bottom and bottom fishes.

   a. Trawl net dimensions shall be as follows:

      1. At least a 25 ft throat width.

      2. 1.5 in mesh-size (body).

      3. 0.5 in mesh-size (linear in the cod end).

   b. Two replicate trawls shall be conducted at each station for a duration of 10 minutes each at a uniform speed between 2.0 and 2.5 knots.

   c. The identity, size (standard length), wet weight, and number of fish in each trawl shall be reported. The number of fish affected by abnormal growth or disease, such as fin erosion, lesions, and papillomas, shall be reported. Fish species shall be reported in rank order of abundance and frequency of occurrence for each trawl. The Shannon-Wiener diversity index shall also be computed for each trawl.

   d. All commercially important macroinvertibrates shall be identified, enumerated, and reported in the same manner as fish species.

6. Benthic sampling shall be conducted annually during the summer at Stations B1 through B5.

a. One liter sediment core samples shall be collected by divers at each of the benthic stations for biological examination and determination of biomass and diversity, and for sediment analyses. Four replicates shall be obtained at each station for benthic analyses, and each shall be analyzed separately. A fifth sample shall be taken at each station for sediment analyses and general description.

b. Each benthic replicate sample shall be sieved through a 0.5 mm standard mesh screen. All organisms recovered shall be enumerated an identified to the lowest taxon possible. Infaunal organisms shall be reported as concentrations per liter for each replicate and each station. Total abundance, number of species and Shannon-Weiner diversity indices shall be calculated (using natural logs) for each replicate and each station.

Biomass shall be determined as the wet weight in grams or milligrams retained on a 0.5 millimeter screen per unit volume (e.g., 1 liter) of sediment. Biomass shall be reported for each major taxonomic group (e.g., polychaetes, crustaceans, mollusks) for each replicate and each station.

c. Sediment grain size analyses shall be performed on each sediment sample (sufficiently detailed to calculate percent weight in relation to the size). Sub-samples (upper tow centimeters) shall be taken from each sediment sample and analyzed for copper, chromium, nickel and zinc.

7. The following general observations or measurement at receiving water, benthic and trawl stations shall be reported:

a. Tidal stage, time, and date of monitoring.

b. General water conditions.

c. Color of the water.

d. Appearance of oil films or greases, or floatable materials.

e. Extent of visible turbidity or color patches.

f. Direction of tidal flow.

g. Description of odor, if any, of the receiving water.

h. Depth at each station for each sampling period.

i. Presence or absence of red tide.

j. Presence and activity of marine life.

k. Presence of the California Least Tern and California Brown Pelican.

8. During the discharge of calcareous material (excluding heat treatment discharge) to the receiving waters, the following observations or measurements shall be recorded and reported in the next monitoring report:

a. Date and times of discharge(s).

b. Estimate of volume and weigh of discharge(s).

c. Composition of discharge(s).

d. General water conditions and weather conditions.

e. Appearance and extent of any oil films or grease, floatable material or odors.

f. Appearance and extent of visible turbidity or color patches.

g. Presence of marine life.

h. Presence and activity of the California least tern and the California brown pelican.

SUMMARY OF RECEIVING WATER MONITORING PROGRAM

Constituent	Units	Stations	Type of Sample	Minimum Frequency of Analysis
Temperature	°C	RW1-RW5	surface	semiannually (flood, ebb)
Temperature	°C	RW6-RW17	vertical profile	semiannually (flood, ebb)
Dissolved oxygen	mg/L	RW1-RW5	surface	semiannually (flood, ebb)
Dissolved oxygen	mg/L	RW6-RW17	vertical profile	semiannually (flood, ebb)
pH	pH Units	RW1-RW5	surface	semiannually (flood, ebb)
pH	pH Units	RW6-RW17	vertical profile	semiannually (flood, ebb)
Fish and macro Invertebrates	----	T1-T4	trawl	semiannually
Fish and macro Invertebrates	----	Intake Serial No. 002	impinge-ment	bimonthly
Benthic Infauna	----	B1-B5	grab	annually
Sediments	----	B1-B5	grab	annually
Mussels	----	Discharge Serial No. 001	tissue	annually

The receiving water monitoring report containing the results of semiannual and annual monitoring shall be received at the Regional Board on March 1 of each year following the calendar year of data collection.

VI. STORM WATER MONITORING AND REPORTING

The Discharger shall implement the Monitoring and Reporting Requirements for individual dischargers contained in the general permit for *Dischargers of Storm Water Associated with Industrial Activities* (State Board Order No. 97-030-DWQ) adopted on April 17, 1997. The monitoring reports shall be received at the Regional Board by July 1 of each year. Indicate in the report the Compliance File CI-2093.

Ordered by: _____ Date: April 26, 2001

Dennis A. Dickinson
Executive Officer

/COD

PRIORITY POLLUTANTS

Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Miscellaneous

Cyanide
Asbestos (only if specifically required)

Pesticides & PCBs

Aldrin
Chlordane
Dieldrin
4,4'-DDT
4,4'-DDE
4,4'-DDD
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
Toxaphene
PCB 1016
PCB 1221
PCB 1232
PCB 1242
PCB 1248
PCB 1254
PCB 1260

Base/Neutral Extractibles

Acenaphthene
Benzidine
1,2,4-trichlorobenzene
Hexachlorobenzene
Hexachloroethane
Bis(2-chloroethyl) ether
2-chloronaphthalene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3'-dichlorobenzidine
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis(2-chloroisopropyl) ether
Bis(2-chloroethoxy) methane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
Benzo(a) anthracene
Benzo(a) pyrene
Benzo(b) fluoranthene
Benzo(k) fluoranthene
Chrysene
Acenaphthylene
Anthracene
1,1,2-benzoperylene
Fluorene
Phenanthrene
1,2,5,6-dibenzanthracene
Indeno (1,2,3-cd) pyrene
Pyrene
TCDD
2-Chloronaphtalene

Acid Extractibles

2,4,6-trichlorophenol
P-chloro-m-cresol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
Pentachlorophenol
Phenol

Volatile Organics

Acrolein
Acrylonitrile
Benzene
Carbon tetrachloride
Chlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Chloroform
1,1-dichloroethylene
1,2-trans-dichloroethylene
1,2-dichloropropane
1,2-dichloropropylene
Ethylbenzene
Methylene chloride
Methyl chloride
Methyl bromide
Bromoform
Bromodichloromethane
Dibromochloromethane
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride
2-chloroethyl vinyl ether
Xylene

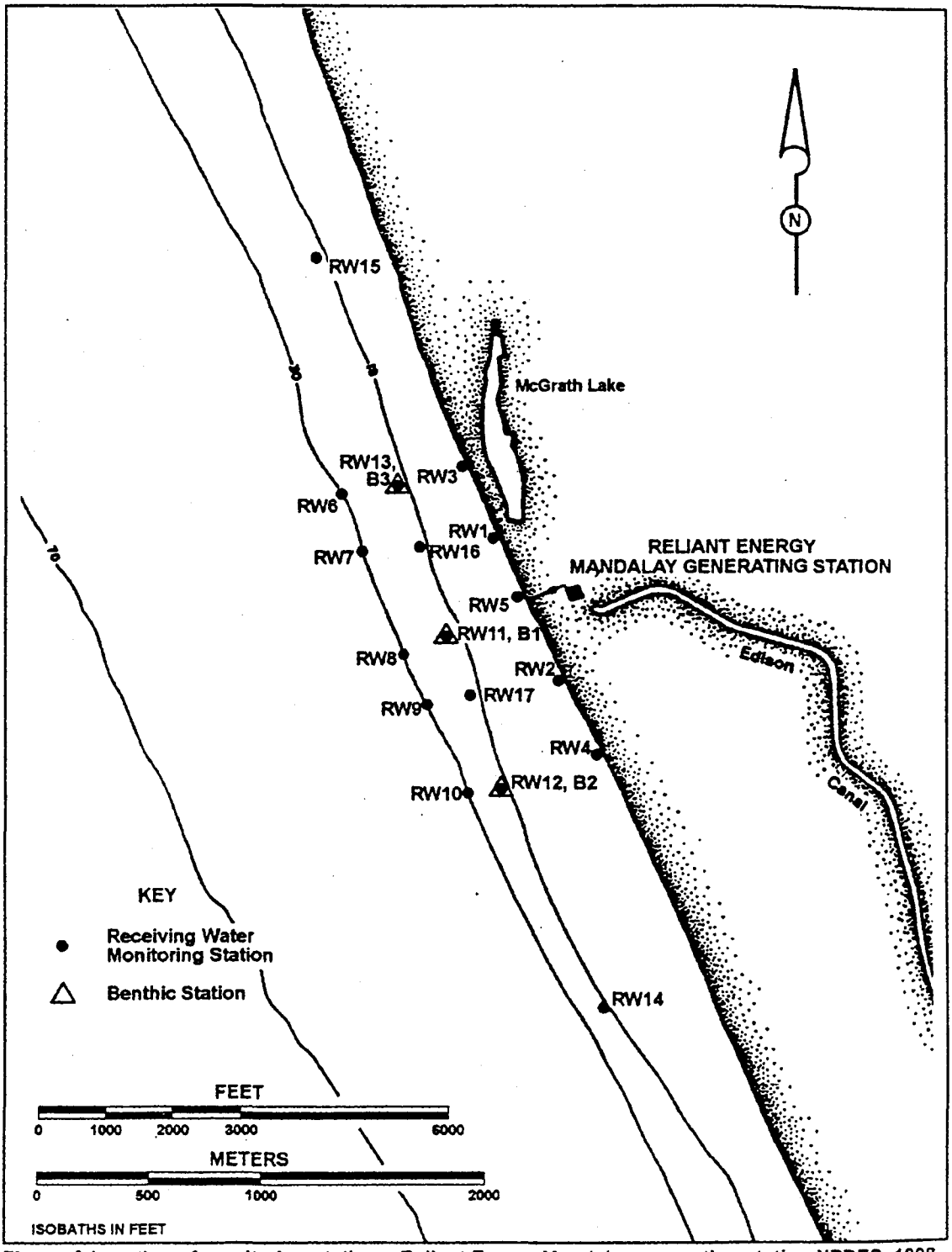


Figure 1. Location of monitoring stations. Reliant Energy Mandalay generating station NPDES, 1998.

ATTACHMENT T1

SWRCB Minimum Levels in ppb (µg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of this Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides & PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1, therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	
Hexachloro-cyclopentadiene	5	5		

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1000, therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1000
Arsenic		2	10	2	2	1		20	1000
Beryllium	20	0.5	2	0.5	1				1000
Cadmium	10	0.5	10	0.25	0.5				1000
Chromium (total)	50	2	10	0.5	1				1000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1000
Selenium		5	10	2	5	1			1000
Silver	10	1	10	0.25	2				1000
Thallium	10	2	10	1	5				1000
Zinc	20		20	1	10				1000

* The normal method-specific factor for these substances is 1, therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2d - PESTICIDES - PCBs*	GC*
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100, therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

APPENDIX N-2

SEA LEVEL RISE ANALYSIS

AECOM

Appendix N-2

Technical Memorandum

Sea Level Rise Analysis

Prepared in Support of Application for Certification, Puente Power Project

OVERVIEW

NRG Oxnard Energy Center LLC has evaluated potential impacts of climate change influenced sea level rise (SLR) on the proposed Puente Power Project (P3 or project). This memorandum summarizes the estimated SLR at two planning horizons (i.e., years 2030 and 2050), presents an evaluation of the impacts of SLR, and considers the potential combined effects of SLR and other sources of flooding that may occur simultaneously due to natural phenomena such as an earthquake or weather related events. The sources of the flooding include tidal flooding, wave and storm surge flooding, riverine inundation, and erosion of the dunes. Descriptions of the potential sources of flooding in combination with SLR are:

1. Tidal Flooding – inundation caused by extreme tides which are combined with SLR for planning horizons 2030 and 2050. Potential impacts could be overtopping of the protective dunes.
2. Wave and Storm Surge Flooding – inundation caused by waves in addition to high water levels. It is equal to the sum of the Stillwater Level (SWL), the wave setup, and wave run-up. Potential impacts could include overtopping of the protective dunes when combined with SLR.
3. Riverine Inundation – inundation caused by flooding of the Santa Clara River that could flood the site from the inland direction, whether due to SLR and/or other natural phenomena (i.e., earthquake induced tsunami or weather events).
4. Erosion of the dunes – The long term exposure of the dunes to wave action that over time could cause failure of the dunes. The likelihood of this occurring increases with SLR.

The following sections of this memorandum provide further detail for each of these potential flooding sources in combination with SLR and evaluate the potential impact to P3.

In summary, the analysis derived from a number of technical resources indicates that SLR in proximity to the proposed P3 may be 2 to 8 inches by 2030 and 7 to 25 inches by 2060 for low to high SLR predicted scenarios.

The predicted SLR elevations would be below the site elevation of 14 feet (North American Vertical Datum, 1988 [NAVD88])) and are below the toe (elevation of approximately 14 feet) of the existing sand dunes along the west property boundary of the site that separate the site from the ocean; the elevation of the top of the beach dunes ranges from approximately 20 to 30 feet. All elevations unless otherwise noted are relative to the NAVD88 datum. If any of the sources of flooding occurs in combination with SLR, the estimated wave-run-up elevation is still anticipated to be below the top of the beach dunes at elevations of 20 to 30 feet. Hence, the existing beach dunes provide adequate protection to the coastline in proximity to P3.

SITE DESCRIPTION

P3 will be developed on approximately 3 acres of previously disturbed vacant brownfield land located within the existing boundaries of Mandalay Generating Station (MGS). MGS is at 393 North Harbor Boulevard, Oxnard, in Ventura County, California - within the Rio De Santa Clara Spanish Land Grant

Sections inferred as 35 and 36, Township 2 North, Range 23 West, on the U.S. Geological Survey Oxnard/Oxnard OE Topographic Map Quadrangles (Latitude: 34.207115; Longitude: 119.250000). The property is bounded by North Harbor Boulevard to the east, undeveloped land and McGrath Lake to the north, the Pacific Ocean to the west, and industrial uses to the south (including a petrochemical facility and the McGrath Peaker Plant). A site vicinity map and aerial project location map are included as Figures 1 and 2, respectively.

MGS currently operates two conventional steam turbine units (Units 1 and 2) and one natural gas combustion turbine unit (Unit 3). Units 1 and 2 were constructed in the 1950s, and have a combined generating capacity of 430 megawatts (MW). Unit 3 was commissioned in 1970, and has a generating capacity of approximately 130 MW.

The California Independent System Operator (CAISO) has recognized the importance of the existing MGS location in providing energy and contingency reserve for the Moorpark Sub-Area of the Big Creek/Ventura Local Reliability Area. Specifically, this location provides essential electrical service to the existing Southern California Edison (SCE) Mandalay switchyard through a dedicated 230-kilovolt (kV) transmission line connection. P3 will ensure the long-term viability of this existing critical generating location and will provide essential electrical service to the residents of Ventura County and the City of Oxnard.

SITE BACKGROUND FOR SEA LEVEL RISE ANALYSIS

The P3 site is located at ground elevation of 14 feet NAVD88. Elevation data used for this analysis are from the NOAA Coastal California TopoBathy Merge Project (NOAA, 2013). The topographic LIDAR data used in this merged project was the 2009-2011 CA Coastal Conservancy LIDAR Project. The data were collected between October 2009 and August 2011. Existing beach dunes separate the ocean and the proposed site. The top of the existing beach dunes range from approximately 20 to 30 feet. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Oxnard shows that the coastal zone adjacent to the proposed project is classified as Zone VE with a baseline flood elevation of 13 feet (FEMA, 2010). Storm surge is taken into account when FEMA conducts coastal zone flood analyses, but potential SLR is not.

Inundation from storm surge and wave run-up has occurred at Mandalay Beach Road along Oxnard Shores on several occasions (e.g., 1982-83 El Nino Event, "Great Storm of 1988", FEMA 2015). Mandalay Road is at an elevation of 10 to 12 feet, a few feet lower in elevation than the toe of the dunes fronting the proposed P3 facility. This is consistent with anecdotal observations by MGS personnel that the highest water levels have been at the toe of the dunes at elevation of approximately 12 to 14 feet. A review of large storm events that have caused damage at Oxnard Shores (1960, '63, '65, '71, '78, '83, '88, '95 and '97-98) indicated no impact to the project site with the exception of the need to repair rip-rap at the MGS outfall in 1983.

TIDAL FLOODING

Tidal flooding is inundation caused by extreme tides, which are combined with SLR for future planning horizons (e.g., 2030 and 2050). Predictions for SLR have been developed by various entities, including the California Climate Change Center (2009), Pacific Institute (2009), USACE (2011), National Research Council (NRC) (NRC, 2012), and the Nature Conservancy (ESA-PWA, 2013). Predictions generally are presented for different projection years (e.g., 2030, 2050) and different SLR scenarios (e.g., low, medium, and high).

As explained in the *State Of California Sea-Level Rise Guidance Document*, predictions of SLR involve significant uncertainty – particularly at individual locations. From the *State Of California Sea-Level Rise Guidance Document* (California Coastal Commission, 2013): "We do not believe that there is enough certainty in the sea-level rise projections nor is there a strong scientific rationale for specifying specific sea-level rise values at individual locations along California's coastline. The uncertainties in future sea-level rise projections increase as the projected time horizon is extended forward through the 21st Century. These uncertainties arise from an incomplete understanding of the global climate system, the inherent unpredictability of natural climate variation, the inability of global climate models to accurately represent all important global and regional components, and the need to make assumptions about important climate drivers over future decades (e.g., greenhouse gas emissions, aerosols, land use). For the near future (out to 2030), confidence in the global and regional projections is relatively high, but uncertainty grows larger as the time horizon of the projection is extended forward. There are large uncertainties in projections for 2100 made using any existing methodology, including process-based numerical models, extrapolations, and semi-empirical methods. The actual sea-level rise value for 2100 is likely to fall within the wide uncertainty bounds provided in the NRC West Coast Sea Level Rise Report, but a precise value cannot be specified with any reasonable level of confidence."

P3 will have a project life of approximately 30 years. In light of the project life, and the uncertainty associated with far future projections discussed above, the analysis evaluates potential future impacts through 2050, which would coincide with the end of the expected project life. Figure 3 compares the projections of SLR along the California Coast to other measures of SLR, including estimates of global SLR and Vermeer and Rahmstorf (2009), which is presently used for coastal planning in California. The estimates from NRC (2012) are slightly less than Vermeer and Rahmstorf predictions and similar to projections for global SLR for the year 2050.

Projections from the Ventura County Resilience Study (ESA-PWA, 2013) are summarized in Table 1 for comparison. Predicted SLR, compared to year 2010, is estimated to range from 2.3 inches by year 2030 (low SLR scenario) to as much as 25.3 inches by year 2060 (high SLR scenario). These projections are similar to the results from NRC (2012) which projected SLR increase of 1.57 inches (low estimate) for the year 2030 to a high estimate for the year 2050 of 24 inches. Note that the Resilience Study and the NRC study have different base years, 2010 versus 2000.

Table 1
Sea-Level Rise Predictions

Year	Low SLR	Medium SLR	High SLR
2030	2.3 inches	5.2 inches	8.0 inches
2060	7.4 inches	16.1 inches	25.3 inches

Source: ESA-PWA, 2013
Note:
SLR = Sea-Level Rise

Figure 4 compares the NRC estimates for SLR to the beach and dune elevations at the P3 site. Under non-storm conditions, even with the high projections for SLR rise at the year 2050, the water level will still be below the level of the toe of the dunes. Even assuming a high estimate of SLR, there would still be about 20 feet of freeboard between the top of the dunes and the high water level. Therefore, the existing beach dunes provide protection against coastal inundation to the MGS site, including the P3 project area.

WAVE AND STORM SURGE FLOODING

Wave and storm surge flooding is inundation caused by waves and storm surge, in addition to high water levels. This is referred to as total water level in FEMA flood studies, and is equal to the sum of the stillwater level, the wave setup, and wave run-up. On FEMA flood maps, areas subject to flooding from coastal high water and waves are referred to as V zones, defined as areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. The beach fronting the project site is classified as a FEMA zone VE with an elevation of 13 feet, about 1 foot below the elevation of the project site and over 10 feet below the top of the dunes.

The NRC (2012) report presented results for extreme water levels calculated for high seas off San Francisco. Though the numbers may be slightly different for Southern California, the trend should be the same. Figure 5 shows the change in frequency and duration of extreme high seas from the years 1960 to 2100. Extreme high seas are defined as seas that exceed 99.99 percent of water levels (about 4.6 feet above mean sea level). Under existing conditions, individual events of extreme high water last 1 to 2 hours; by mid-century, extreme high water is projected to occur more than 250 hours per decade. However, as can be seen in Figure 5, most of the increase occurs in the last half of the century, after the year 2050, and after the expected end of the P3 project life.

The FEMA VE zone at the project site is 13 feet NAVD88. With SLR of between 7 inches and 2 feet by 2050 (see Table 1 and Figure 3), future wave run-up will be higher. If accretion of the beach due to sediment supplied by the Santa Clara River during large storm events and/or trapping by the jetty and breakwater at Channel Island Harbor (see Section on Erosion below) is similar to the rate of sea level rise, the beach will be able to maintain a similar slope and width as existing. In this case the increase in run-up would be about the same as the increase in sea level. The expected elevation would be about 14 to 16 feet. This would still be well below the top of the dunes.

If the accretion of the beach cannot keep up with SLR, the beach will erode and become narrower. The Ventura County Resilience Study (ESA-PWA 2013) predicted about 130 feet of erosion on Mandalay Beach Road beach. The beach in front of the P3 site varies in width but is generally greater than 300 feet wide. If SLR were to cause erosion of the beach on the order of 130 feet and if seasonal variations in width (the beach tends to be narrower in the winter than in the summer) reduce the width farther during large storm events, large waves could run-up the face of the dunes rather than only on the beach. Since the dunes are steeper than the beach, the additional run-up would be greater than the increase in SLR. Under worst-case conditions (i.e., beach has eroded most of the way back to the dunes, 2 feet of SLR by 2050), the increase in run-up could be on the order of 5 to 10 feet. This would put the new run-up elevation to between 20 and 25 feet (13 ft + 2ft SLR + 5-10 feet additional run-up). This would put the run-up near the top of the dunes. However, for this to occur the beach would need to erode most of the way back to the dunes (over 300 feet). Given that the beach is now stable or accreting and the upper beach is over 10 feet in elevation above mean higher high water, 2 feet of SLR will likely not result in this drastic a change in beach morphology. Thus, the likelihood of wave and storm surge flooding is remote.

RIVERINE INUNDATION

The closest river is the Santa Clara River, approximately 2 miles north of the project site. The project site is not in a FEMA-designated 100-year floodplain associated with the Santa Clara River. The Coastal Resilience Report also does not show the project site in a 100-year floodplain for future year 2060 conditions. The northern portion of the MGS property, where the new P3 facility will be located, is in "Other Areas Zone X" (areas determined to be outside the 0.2 percent annual chance floodplain) (FEMA, 2010). Part of the MGS property is in an "X" zone defined as "Areas of 0.2% annual chance flood; areas

of 1% annual chance flood with average depth of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood". The "X" zone extends about 3 miles from the project site to the Santa Clara River to the northeast about 3 to 4 miles upstream from the mouth of the river where the river breaks out of its banks and flows over the Oxnard Plain. These flows, if they were to occur, would consist mostly of sheet or shallow flow and could be accommodated in the project design. Therefore, this potential flood source would not impact the project in the future.

EROSION

The long-term exposure of the dunes to wave action can, over time, cause failure of the dunes. The likelihood of this occurring increases with SLR.

Accretion has been occurring along the stretch of beach adjacent to the project site. Aerial photographs of the beach taken between 1947 and 2014 (see Attachment 1) show significant accretion, as shown in Figure 6; the beach pictured in 2014 was approximately 300 feet wider than that pictured in 1947. Because the aerial photographs may not all have been taken at the same part of the tide, and the average daily tidal horizontal variation is about 75 feet, the beach has widened about 200 feet during this period.

The U.S. Geological Survey (USGS) (Barnard, et al, 2009) studied beach erosion and accretion along the coasts of Santa Barbara and Ventura Counties. Beach profiles from 1987 through 2007 were collected at several locations along the coast including along the Mandalay Beach area. The sections showed a general trend of accretion south of the Santa Clara River though not consistently through all times or sections. The study identified the Santa Clara River as a large source of sediment that caused accretion south of the river mouth. This was attributed to large pulses of sediment from the river after large storm events (e.g., January 2005) (Barnard, et al, 2009). Elwany and Diener (2000) evaluated changes in nearshore bathymetry at Mandalay Beach. They reviewed bathymetry data from 1933 to 1987. They reported slight erosion from 1933 to 1977 and stable or modest advancement since 1987. This increase in beach width may also be a consequence of the jetties and breakwater constructed at the mouth of Channel Islands Harbor, which may be trapping sediment and causing accretion.

The Coastal Resilience Report [ESA-PWA, 2013] estimated the amount of shoreline erosion that is expected to occur up to the year 2100. Under worst-case conditions (i.e., high SLR and including potential erosion by a 500-year event), the beach could erode about 130 feet from its current location by year 2060 based on rates reported for Mandalay Beach Road.

Therefore, even given the worst-case scenario outlined above and assuming that historical accretion will not continue, the beach would be approximately the same width in 2050 as it was in 1947.

TSUNAMI INUNDATION

Tsunami Inundation Maps for Emergency Planning developed by CalEMA (2009) were reviewed to determine whether a Tsunami could inundate the P3 project area. A copy of the Tsunami Inundation Map for the Oxnard area is included as Attachment 2. The map shows that the project area is not within the Tsunami inundation zone. The inundation area on the map represents inundation from combining inundation results for an ensemble of source events affecting the Venture County coastline. Therefore, all of the inundation region in a particular area will not likely be inundated during a single tsunami event (CalEMA 2009). The contours on the map found in Attachment 2 indicate that the tsunami is at an elevation of between 10 and 15 feet. To confirm the elevation, the tsunami inundation boundary was compared to the NOAA LIDAR data used for the analysis in this Technical Memorandum. Based on this comparison, the tsunami water elevation at the project site was estimated to be about 14 to 15 feet.

With SLR, it was assumed that the elevation of tsunami would increase by the predicted amount of SLR; which for the P3 site would be between about 7 inches and 2 feet by 2050. With 2 feet of SLR the estimated elevation of the tsunami in 2050 would be 16 to 17 feet. This elevation is still less than the elevation of the ocean front dunes and berm to the north of the facility.

CONCLUSIONS

Climate change is expected to contribute to SLR, and to the frequency and intensity of weather-related events; however, potential future effects related to SLR are not anticipated to have significant impacts on P3 during the expected 30 year life of the project. As noted, SLR alone is anticipated to range from 2 to 25 inches from 2030 to 2050, that when added to high water levels is significantly below the beach dunes along the western boundary of the project site and the levee along the northern edge of the project site. As recommended in the State Of California Sea-Level Rise Guidance Document, consideration should be given to scenarios that combine extreme oceanographic conditions on top of the highest water levels projected to result from SLR over the expected life of a project. The combined effects of SLR, potential erosion of the berm, wave events, and storm surge run-up that could occur during the life of the project through planning horizon 2050 are not expected to adversely impact the project. The potential anticipated elevation of SLR, in combination with any of these natural phenomena or weather induced events, would be below the beach dunes in proximity to the west boundary of the project site.

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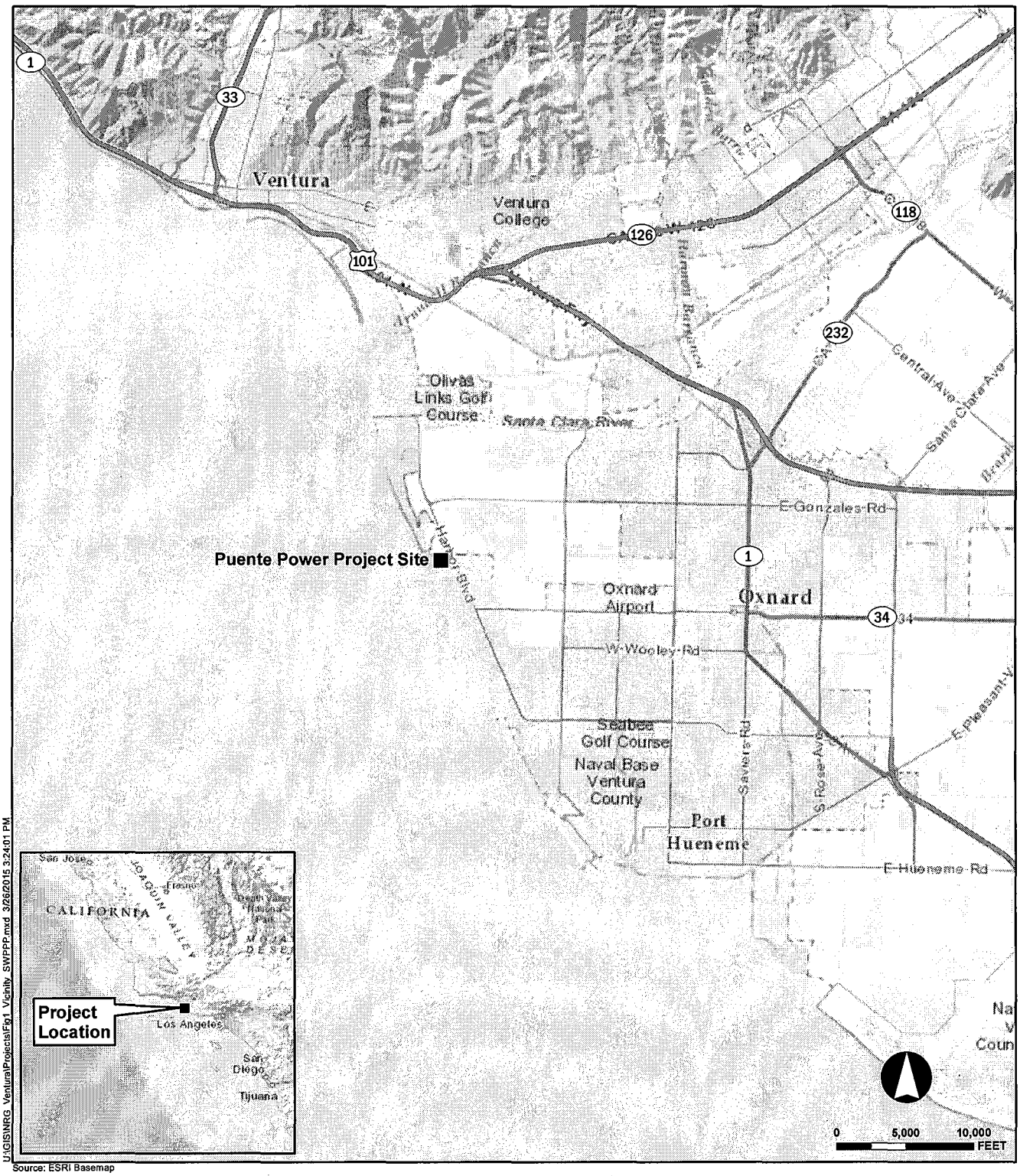
AECOM

Figures



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Source: ESRI Basemap

SITE VICINITY MAP

■ Puente Power Project Site

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 1

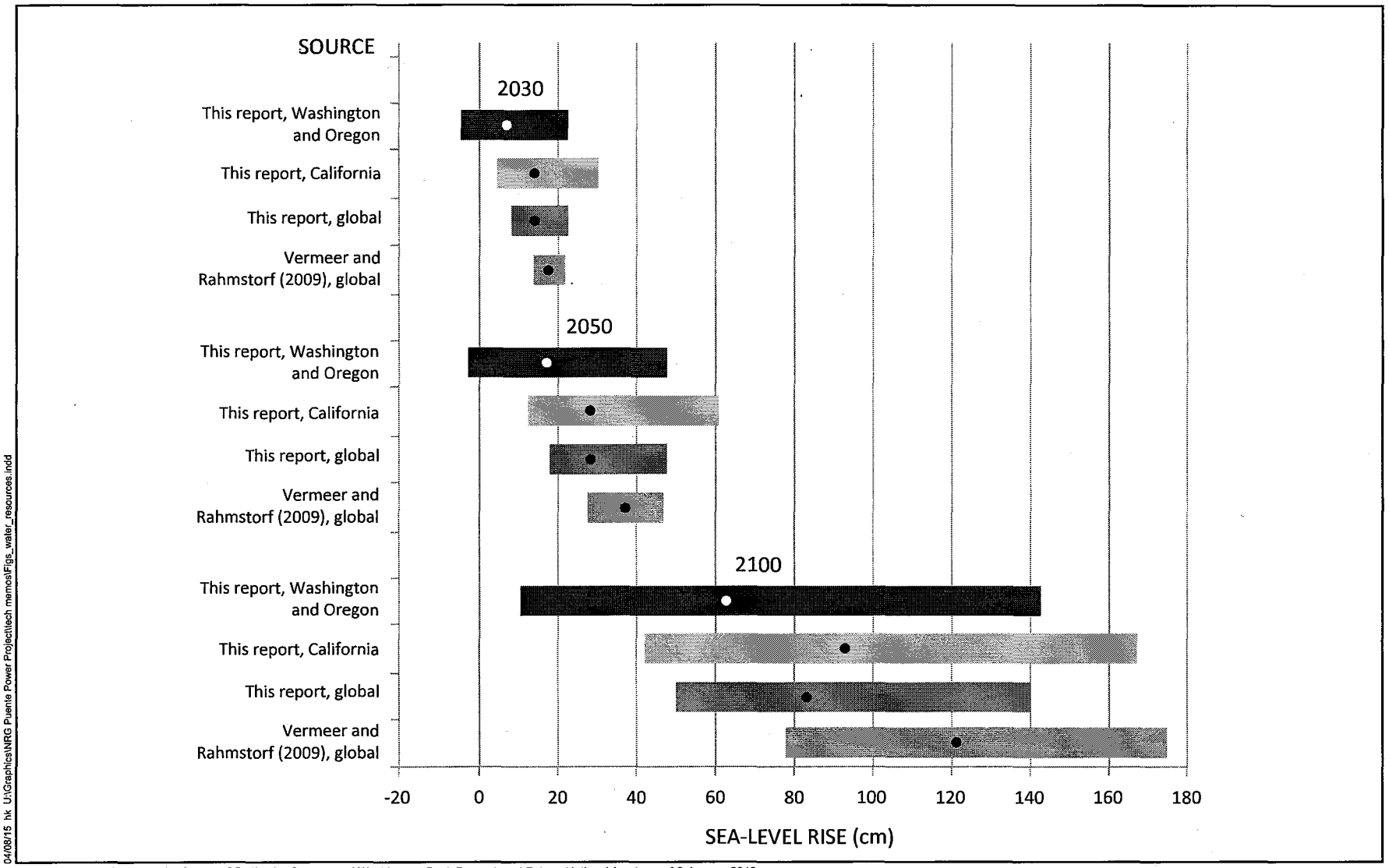
Mandalay Generating Station Property Boundary

Puente Power Project Proposed Boundary

PROJECT LOCATION MAP

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 2



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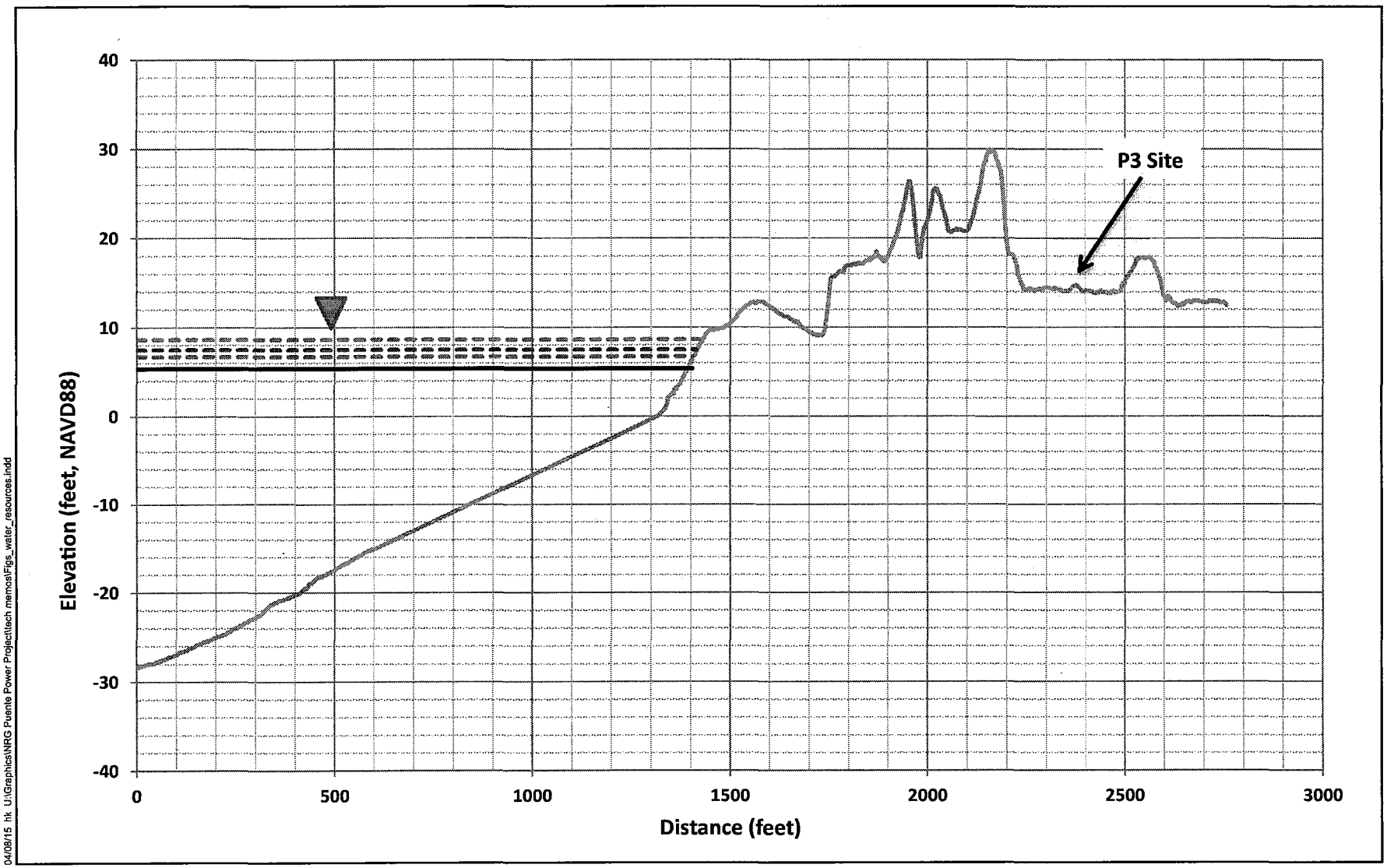
Source: Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, National Academy of Sciences, 2012.

Note:
1. Committee's projected sea-level rise for California, Oregon, and Washington compared with global projections. The dots are the projected values and the colored bars are the ranges. Washington and Oregon = coastal areas north of Cape Mendocino; California = coastal areas south of Cape Mendocino.

NRC SEA LEVEL RISE PROJECTIONS

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 3



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Beach and Dunes Profile at P3 Site

Existing MHHW

MHHW+Low SLR

MHHW+Medium SLR

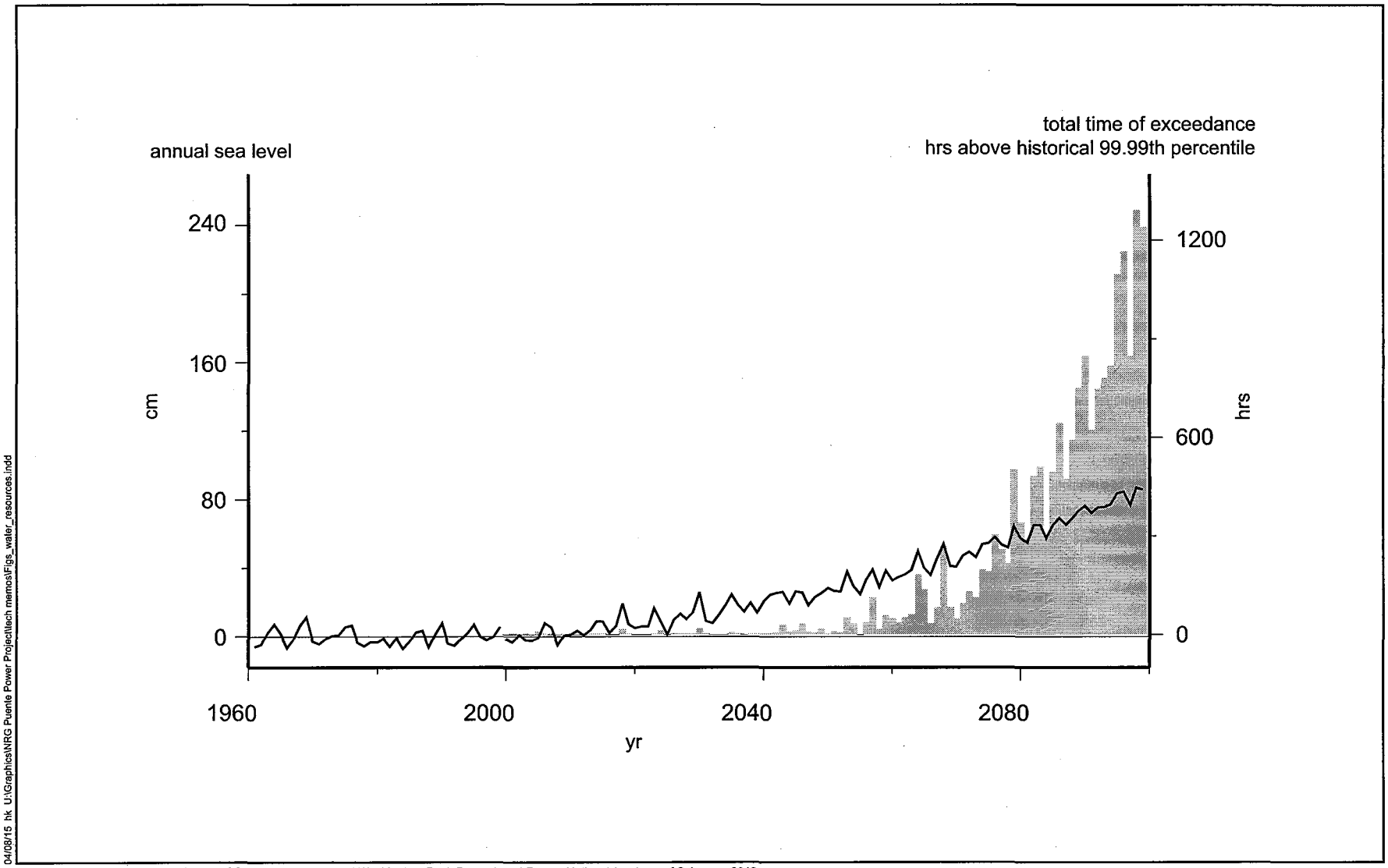
MHHW+High SLR

Notes:
1. MHHW=Mean Higher High Water
2. SLR=Sea Level Rise

OCEAN WATER LEVELS AND SEA LEVEL RISE

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 4



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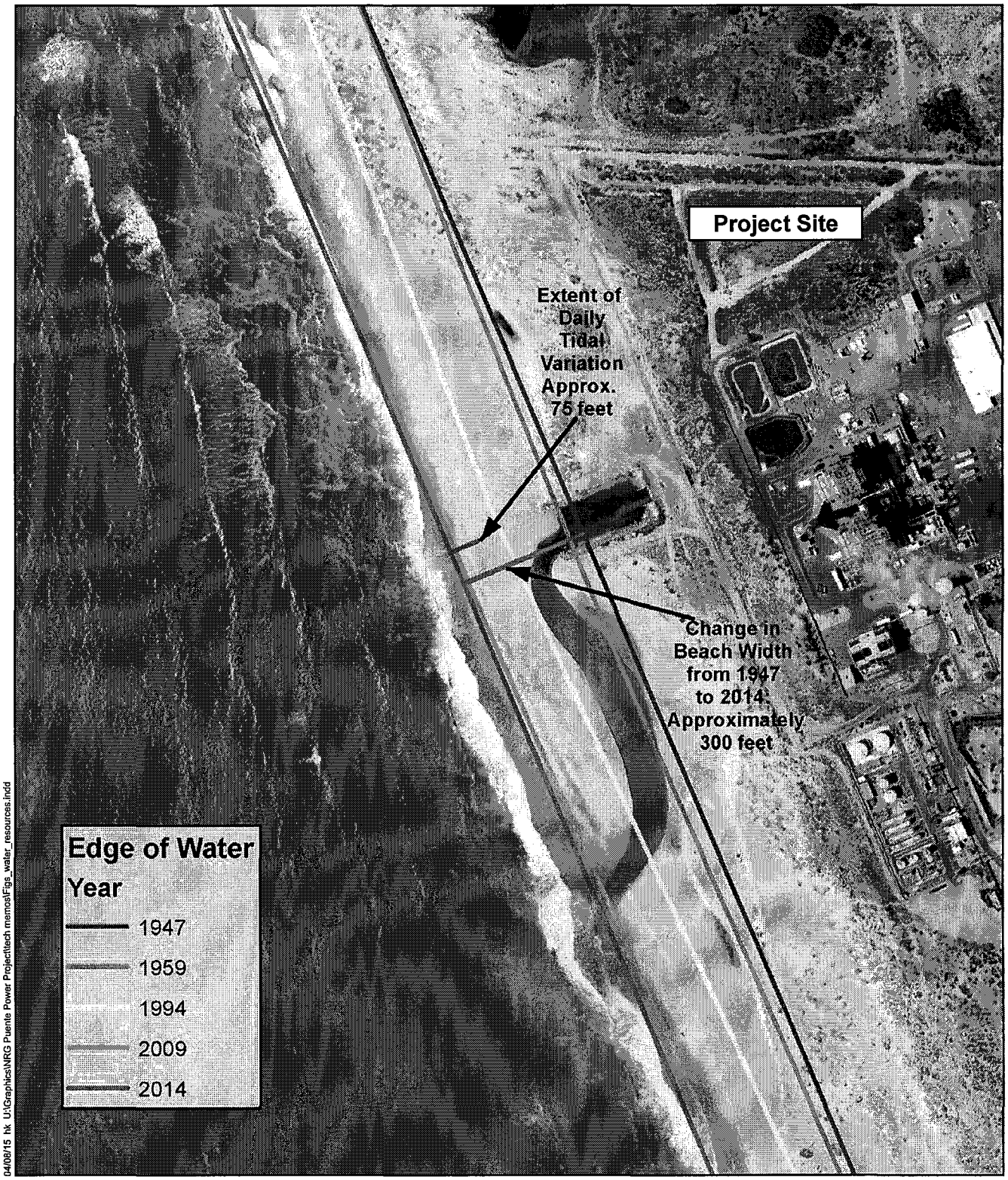
Source: Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, National Academy of Sciences, 2012.

Note:
1. Projected number of hours (blue bars) of extremely high sea level off San Francisco under an assumed sea-level rise and climate change scenario. In this exercise, a sea-level event registers as an exceedance when San Francisco's projected sea level exceeds its recent (1970–2000) 99.99th percentile level, 1.4 m above historical mean sea level. In the recent historical period, sea level has exceeded this threshold about one time (1 hour) every 14 months. Sea-level rise (black line) during 1960–1999 was arbitrarily set to zero, then increased to the committee's projected level for the San Francisco area over the 21st century (92 cm). SOURCE: Adapted from Cloern et al. (2011).

PROJECTED NUMBER OF HOURS OF EXTREME HIGH SEA LEVELS

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 5



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Note:
1. Beach position as shown on aerial photographs from 1947-2014.

Not to Scale

MANDALAY BEACH 1947 – 2014

NRG
Puente Power Project
April 2015 Oxnard, California

FIGURE 6

AECOM

Attachment 1

Historic Aerial Photographs

April 8, 2015

Mandalay Energy Center Project Site
393 North Harbor Boulevard
Oxnard, CA 93035

Inquiry Number: 4185537.12
January 22, 2015

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

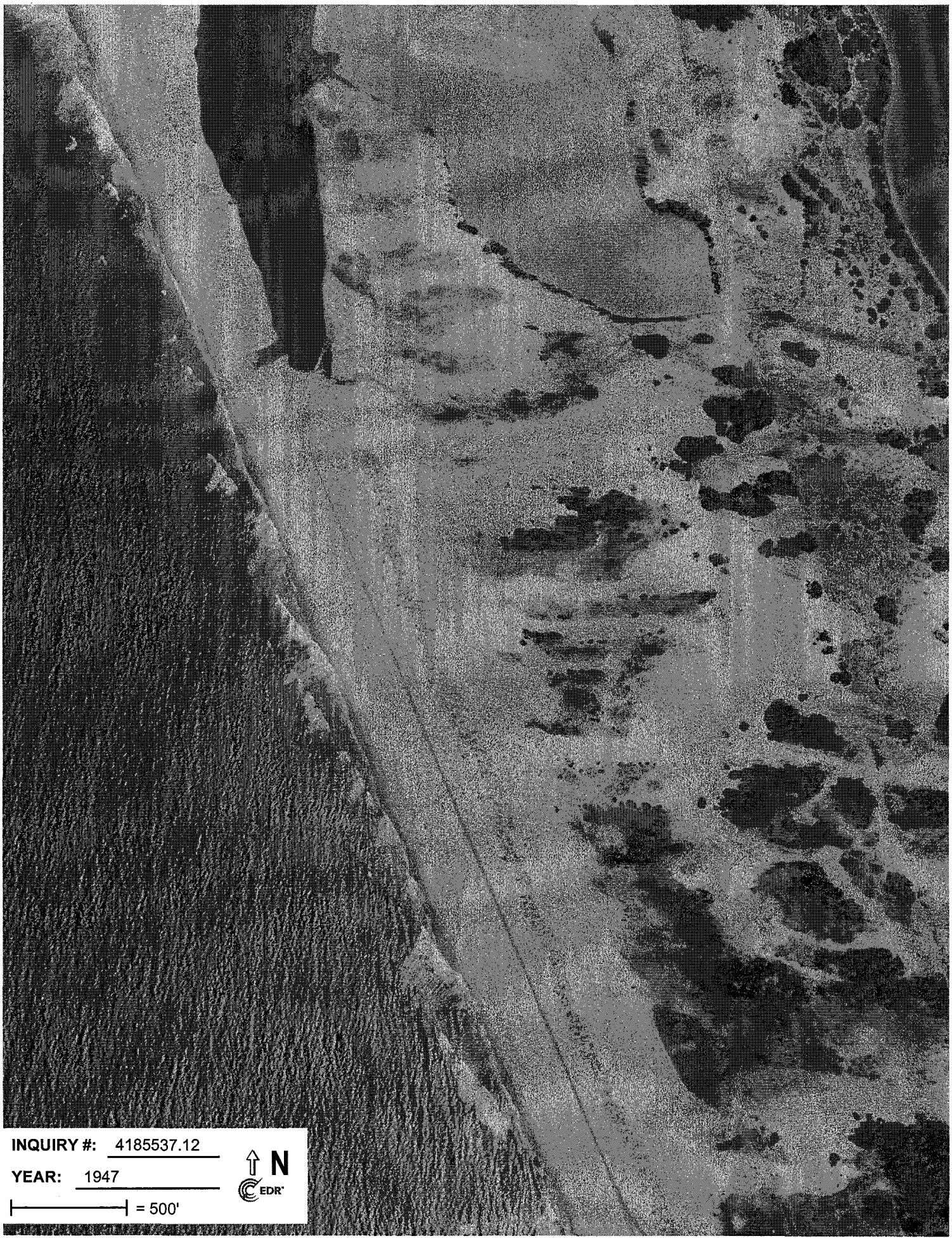
Aerial Photography January 22, 2015

Target Property:

393 North Harbor Boulevard

Oxnard, CA 93035

Year	*Scale*	*Details*	*Source*
1947	Aerial Photograph. Scale: 1"=500'	Flight Year: 1947	USGS
1953	Aerial Photograph. Scale: 1"=500'	Flight Year: 1953	USGS
1959	Aerial Photograph. Scale: 1"=500'	Flight Year: 1959	Robinson
1967	Aerial Photograph. Scale: 1"=500'	Flight Year: 1967	USGS
1977	Aerial Photograph. Scale: 1"=500'	Flight Year: 1977	Teledyne
1984	Aerial Photograph. Scale: 1"=500'	Flight Year: 1984	USGS
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP


INQUIRY #: 4185537.12
YEAR: 1947
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EDR


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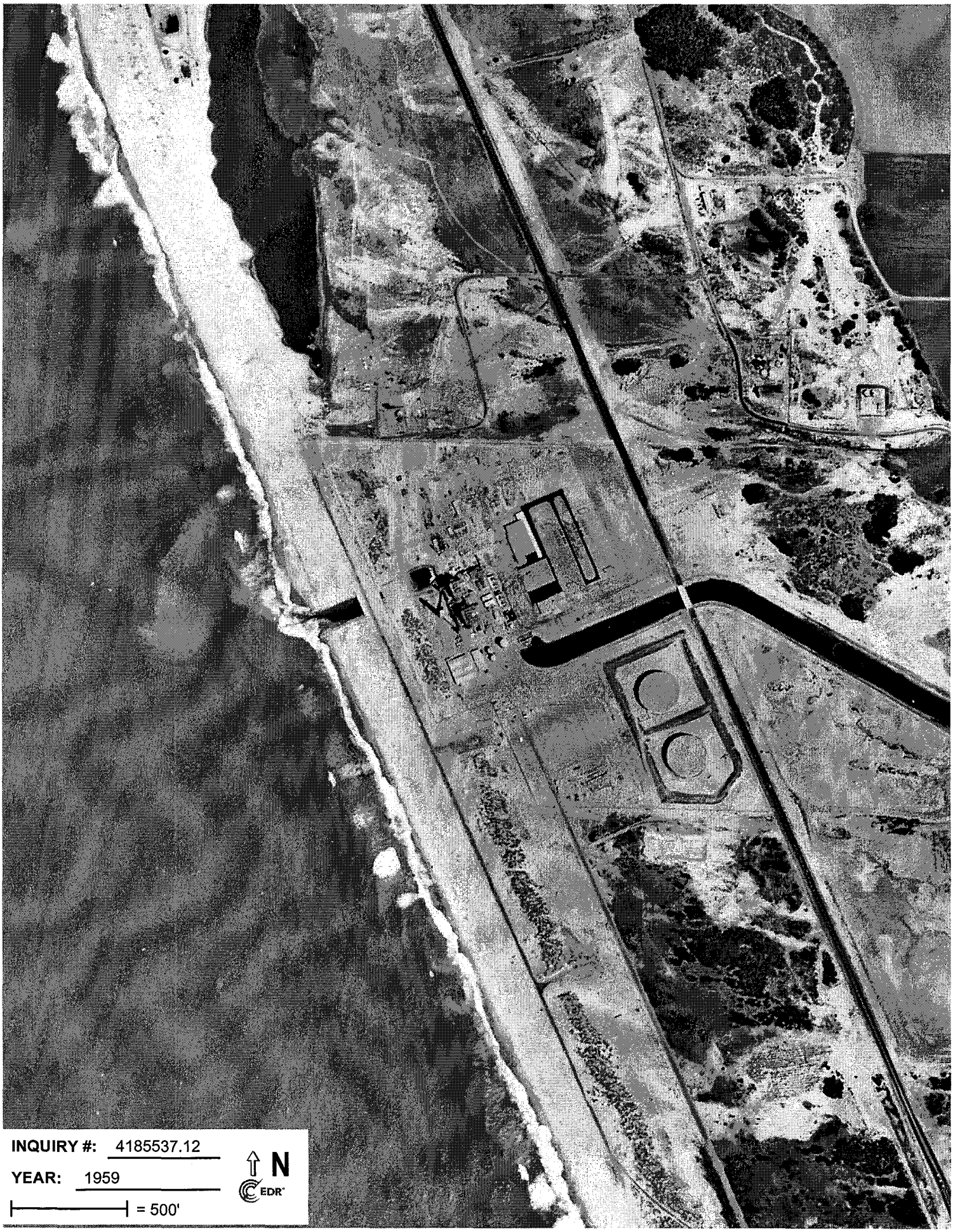
EDR



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YEAR: 1959

= 500'

N

EDR

INQUIRY #: 4185537.12

YEAR: 1967

= 500'

N

EDR

INQUIRY #: 4185537.12

YEAR: 1977

= 500'

N

EDR


INQUIRY #: 4185537.12
YEAR: 1984
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EDR

INQUIRY #: 4185537.12

YEAR: 2009

= 500'

N

EDR


INQUIRY #: 4185537.12
YEAR: 2010
= 500'
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INQUIRY #: 4185537.12
YEAR: 2012
= 500'
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EDR

AECOM

Attachment 2

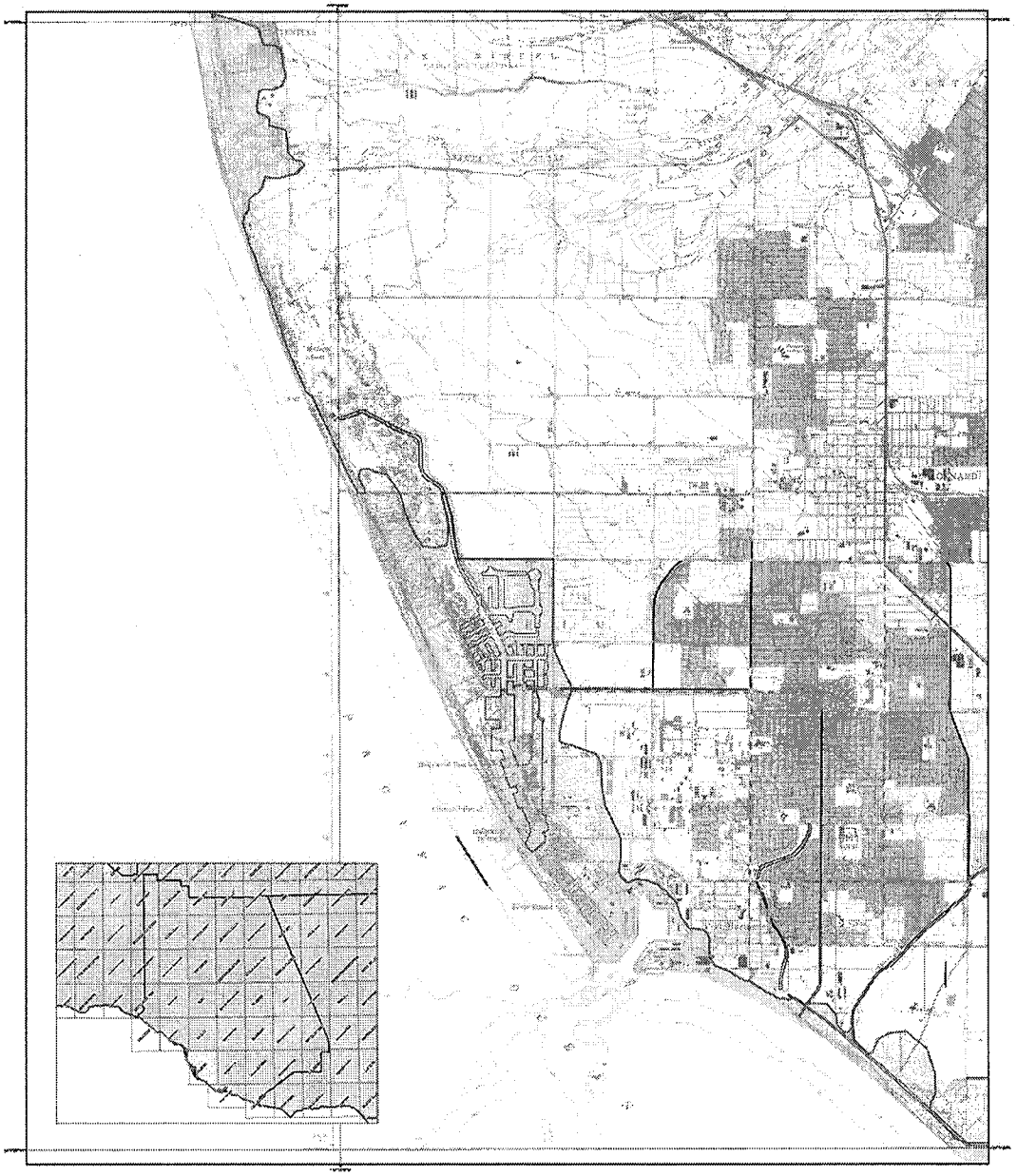
Tsunami Inundation Map

April 8, 2015

California Emergency Management Agency
California Geological Survey
University of Southern California

Tsunami Inundation Map for Emergency Planning
Oxnard Quadrangle

State of California
County of Ventura



TSUNAMI INUNDATION MAP FOR EMERGENCY PLANNING

State of California ~ County of Ventura

OXNARD QUADRANGLE

February 15, 2009

SCALE 1:24,000

METHOD OF PREPARATION

Inital tsunami modeling was performed by the University of Southern California (USC) Tsunami Research Center funded through the California Emergency Management Agency (CalEMA) by the National Tsunami Hazard Mitigation Program. The tsunami modeling process adapted the MOST (Method of Splitting Tsunamis) computational program (Version 3), which allows for wave evolution over a complex bathymetry and topography, used for the inundation mapping (Titov and Gonzalez, 1997; Titov and Synolakis, 1998).

The bathymetric/topographic data that were used in the tsunami models consist of a series of nested grids. Near shore grids with a 3 arc second (75- to 90-meters) resolution or higher, and a adjusted to "Mean High Water" sea level conditions, representing a conservative sea level for the intended use of the tsunami modeling and mapping.

A suite of tsunami source events was selected for modeling, representing realistic local and distant earthquakes and hypothetical extreme undersea, near shore landslides (Table 1). Local tsunami sources that were considered include offshore reverse-thrust faults, west-dipping basins on strike-slip fault zones and large submarine landslides capable of significant seafloor displacement and tsunami generation. Distant tsunami sources that were considered include great subduction zone events that are known to have occurred historically (1960 Chile and 1964 Alaska earthquakes) and others which ruin around the Pacific Ocean "Ring of Fire."

In order to enhance the result from the 75- to 90-meter inundation grid data, a method was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution) that better defines the location of the maximum inundation line (U.S. Geological Survey, 1990; Intermap, 2003; NOAA, 2004). The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historic inundation information (Lander, et al., 1993). This information was verified, where possible, by field work coordinated with local county personnel.

The accuracy of the inundation line shown on these maps is subject to limitations in the accuracy and completeness of available terrain and tsunami source information, and the current understanding of tsunami generation and propagation phenomena as expressed in the models. Thus, although an attempt has been made to identify a credible upper bound to inundation at any location along the coastline, it remains possible that actual inundation could be greater in a major tsunami event.

This map does not represent inundation from a single tsunami event. It was created by combining inundation results for an ensemble of source events affecting a given region (Table 1). For this reason, all of the inundation region in a particular area will not likely be inundated during a single tsunami event.

References:

Intermap Technologies, Inc., 2003, Intermap product handbook and quick start guide: Intermap NEXTmap document on 5-meter resolution data, 18 p.

Lander, J.F., Lockridge, P.A., and Kozuch, M.J., 1993, Tsunamis Affecting the West Coast of the United States 1806-1992: National Geophysical Data Center Key to Geophysical Record Documentation No. 29, NOAA, NESDIS, NGDC, 242 p.

National Aeronautics and Oceanic Administration (NOAA), 2004, Interferometric Synthetic Aperture Radar (IfSAR) Digital Elevation Models from GeoSAR platform (Earth Data), 3-meter resolution data.

Titov, V.V., and Gonzalez, F.I., 1997, Implementation and Testing of the Method of Tsunami Splitting (MOST): NOAA Technical Memorandum ERL PMEL--112, 11 p.

Titov, V.V., and Synolakis, C.E., 1998, Numerical modeling of tidal wave runup: Journal of Waterways, Port, Coastal and Ocean Engineering, ASCE, 124 (4), pp 157-171.

U.S. Geological Survey, 1990, Digital Elevation Models: National Mapping Program, Technical Instructions, Data Users Guide 5, 48 p.

Table 1: Tsunami sources modeled for the Ventura County coastline.

Sources (M = moment magnitude used in modeled event)		Areas of Inundation Map Coverage and Sources Used		
		Santa Barbara to Ventura	Ventura	Port Hueneme
Local Sources	Anacapa Dome Fault		X	X
	Oakshire Fault			X
	Channel Island Thrust Fault	X	X	X
	Santa Monica Fault			
	Malibu Coast #1	X	X	
	Malibu Coast #2		X	
Distant Sources	Cascadia Subduction Zone #2 (M9.2)		X	
	Central Aleutian Subduction Zone#1 (M9.0)	X	X	X
	Central Aleutian Subduction Zone#2 (M9.2)		X	
	Kuril Arc Subduction Zone (M9.0)	X	X	X
	Japan Subduction Zone #1 (M8.6)		X	X
	Japan Subduction Zone #2 (M8.9)		X	
	Peru-Chile Earthquake (M8.4)		X	X
	1964 Alaska Earthquake (M9.2)	X	X	X
	Japan Subduction Zone #3 (M8.6)		X	
	Kuril Islands Subduction Zone #1 (M8.6)		X	
	Kuril Islands Subduction Zone #2 (M8.9)		X	

MAP EXPLANATION

Tsunami Inundation Line

Tsunami Inundation Area

PURPOSE OF THIS MAP

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning work only. This map, and the information presented herein, is not a legal document and does not meet disclosure requirements for real estate transactions nor for any other regulatory purposes.

The inundation map has been compiled with best currently available scientific information. The inundation line represents the maximum probable tsunami runup from a number of sources, yet credible, tsunami sources. Tsunamis are rare events, due to a lack of known occurrences in the historical record, this map includes no information about the probability of any tsunami affecting any area within a specific period of time.

Please refer to the following websites for additional information on the development and/or intended use of the tsunami inundation map:

State of California Emergency Management Agency, Earthquake and Tsunami Program: http://www.oes.ca.gov/WebPages/oeswebsite.nsf/Content/5F5C5489A7156D7186852579100588B8?OpenDocument

University of Southern California – Tsunami Research Center: http://www.usc.edu/dept/tsunamis/2005/index.php

State of California Geological Survey Tsunami information: http://www.consrv.ca.gov/cgs/tsunami/Pages/tsunamiindex.htm

National Oceanic and Atmospheric Agency Center for Tsunami Research (MOST model): http://nctr.pmel.noaa.gov/time/land/boundmodels.html

MAP BASE

Topographic base maps prepared by U.S. Geological Survey as part of the 7.5 minute Quadrangle Map Series (originally 1:24,000 scale). Tsunami inundation line boundaries may reflect revised digital orthotopographic and topographic data that can differ significantly from contours shown on the base map.

DISCLAIMER

The California Emergency Management Agency (CalEMA), the University of Southern California (USC), and the California Geological Survey (CGS) make no representation or warranties regarding the accuracy of the inundation lines nor the data from which the map was derived. Neither the State of California nor CalEMA shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

EXHIBIT 5

DOCKETED	
Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	206310
Document Title:	Applicant's Responses to City of Oxnard Data Requests, Set 2 (47-67)
Description:	N/A
Filer:	Paul Kihm
Organization:	Latham & Watkins LLP
Submitter Role:	Applicant Representative
Submission Date:	10/8/2015 4:29:47 PM
Docketed Date:	10/8/2015

Application for Certification
(15-AFC-01)

Puente Power Project (P3)
Oxnard, CA

Responses to City of Oxnard Data Requests Set 2 (47-67)

October 2015

Submitted to:
The California Energy Commission

Prepared by: AECOM

TABLE OF CONTENTS

RESPONSES TO CITY OF OXNARD DATA REQUESTS SET 2

TABLES

FIGURES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AFC	Application for Certification
CalEMA	California Emergency Management Agency
CCC	California Coastal Commission
CGS	California Geological Survey
FEMA	Federal Emergency Management Agency
GEV	generalized extreme value
LiDAR	Light Detection and Ranging
m^3	cubic meters
mg/L	milligrams per liter
MGS	Mandalay Generating Station
MHW	mean high water
MHHW	mean higher high water
MLLW	mean lower low water
mm/year	millimeters per year
msl	mean sea level
NAVD88	North American Vertical Datum of 1988
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
P3	Puente Power Project
ppm	parts per million
SLR	sea-level rise
USACE	United States Army Corps of Engineers

On September 17, 2015, Applicant indicated that additional time was required to respond to City of Oxnard Data Request Nos. 59, 60, and 62. The outcome of analysis that is currently under way in order to respond to those Data Requests may in certain instances alter responses provided below on related issues. Applicant therefore reserves the right to modify the responses provided herein to the extent warranted by additional analysis currently under way.

Technical Area: Environmental Hazards

BACKGROUND: SEA-LEVEL RISE

The AFC evaluated the impact of sea level rise risk on the Project in Appendix N-2. The analysis considers combined effects of sea level rise risk and other sources of flooding that may occur simultaneously, including tidal flooding, wave and storm surge flooding, riverine inundation, dune erosion, and tsunami inundation. The impacts are concluded to not be significant and no mitigation is proposed. In contrast, the Preliminary Geotechnical Evaluation, AFC, Appendix A-9, recommends mitigation. AFC, Appendix A-9, p. 16.

The sea level risk analysis fails to consider the impact of simultaneous tsunami, wave and storm surge flooding, and riverine inundation. Without reporting any cumulative analysis, the AFC concludes: "The combined effects of SLR, potential erosion of the berm, wave events, and storm surge run-up that could occur during the life of the project through planning horizon 2050 are not expected to adversely impact the project." AFC, Appendix N-2, p. 6.

DATA REQUEST

47. Please revise the sea level rise analysis in Appendix N-2 to include the cumulative effect of a tsunami, wave and storm surge flooding, dune erosion, and riverine inundation. Your analysis should report the cumulative rise in feet above mean sea level for the combined impact.

RESPONSE

As requested, the cumulative effect of multiple potential sources of flooding was analyzed as described below. It should be noted that the cumulative effect, reported as the cumulative rise in feet above mean sea level (MSL), although not impossible to occur over the life of the project (conservatively assumed to be from 2020 through 2050), is extremely unlikely. It is also worth noting that the cumulative effect as defined in Data Request 47 is different, and more conservative than the combined flood hazard zones described in the *Coastal Resilience Study Ventura* developed for the Nature Conservancy (ESA-PWA, 2013). The *Coastal Resilience Study Ventura* report, which is not intended for project-level analysis, shows areas that are subject to each of these hazards, but not necessarily simultaneously. Although the combined hazard zones provide information on the possible hazards that could occur at a site, which may be considered useful for planning purposes, this type of analysis does not take into account the probability of simultaneously occurring events. However, cumulative effect implies both possibility and probability; therefore, both need to be considered as part of the analysis. Lastly, the cumulative effect of multiple hazards exceeds the normal practice for design standards for power plants that would normally be designed for a 100-year to 500-year standard.

As requested, the Applicant has evaluated the combined effects of the following events:

- tsunami
- wave and storm surge
- dune erosion
- riverine inundation
- sea level rise (SLR)

All elevations unless otherwise noted are relative to the North American Vertical Datum of 1988 (NAVD88) datum. To adjust elevations to MSL, subtract 2.415 feet from the NAVD88 elevation (i.e., El NAVD88- 2.415 = El MSL).

Tsunami

This section provides a brief summary of tsunamis. More details will be provided in the responses to Data Requests 59, 60, and 62.

As shown on AFC Figure 4.4-4, the proposed project site is not included in the inundation area shown on the existing *Tsunami Inundation Map for Emergency Planning* (CalEMA, 2009), implying that the site is not in danger of significant inundation from tsunamis, based on information available at the time the map was created. The inundation area on the map represents inundation from combining inundation results for an ensemble of source events affecting the Ventura County coastline, including the Goleta Landslide–generated tsunami. The source events used to develop the map are listed on the map (see Attachment 2 in AFC Appendix N-2).

One of the major sources of inundation shown on this map is from the Goleta Landslide. The maximum onshore run-up elevation associated with a tsunami reported in the California Geological Survey Special Report 236 (CGS, 2014) for Oxnard is 10 feet (no datum is given). The *2009 Tsunami Inundation Map* used topographic data adjusted to Mean High Water (MHW). At the Santa Barbara tide gage, MHW is 4.51 feet above NAVD88. At the Santa Monica tide gage, MHW is 4.5 feet above NAVD88. Therefore, the maximum run-up at Oxnard near the project site would be approximately 14.5 feet NAVD88 (run-up of 10 feet plus MHW of 4.5 feet) assuming the tsunami occurs at high tide. At Santa Barbara, the difference between MHW and mean low water (MLW) is 3.7 feet. Therefore, if the tsunami occurs at MHW, the run-up elevation would be approximately 14.5 feet; and if it occurs at MLW, the run-up elevation would be approximately 10.8 feet. It was assumed that there would be a 50 percent chance that the tsunami would occur at high water; and a 50 percent chance that it would occur during low water. The CGS (2014) report emphasizes the importance of tidal conditions during the tsunami, especially during the first 5 hours. As reported by CGS, "*during the 2010 and 2011 tsunamis in California, the first five hours after the initial wave arrival were the most important for capturing the highest actual tsunami amplitude for most locations in California. During both tsunamis, inundation of dry land was essentially nonexistent in the state because this peak tsunami activity occurred in conjunction with low-tide conditions.*"

The likelihood of tsunamis affecting the Ventura Coast is extremely remote. The return period for the Goleta Landslide tsunami is estimated to be approximately 10,000 to 15,000 years (the equivalent annual probability[1] is 0.0001 to 0.00007) (Lee et al., 2004). Recent analysis (e.g.,

[1] The annual probability is the probability of the event occurring in any given year. An annual probability of 0.01 has a 1% chance of occurring in any year or on average once in 100 years (1 divided by 0.01). An annual probability of 0.0001 has a 0.01% chance of occurring in any year or on average once every 1/0.0001 years or 10,000 years.

Ryan et al., 2015) indicates that the project site might be in the tsunami inundation area for more frequent, although still infrequent, local earthquakes. One of the more recently identified local sources of tsunamis is the Ventura-Pitas Point fault and adjacent structures system. A tsunami due to a large earthquake on this fault system could potentially cause inundation of the project site. Return periods for a large earthquake on this system are estimated to be between 400 and 2,600 years (0.0025 to 0.00038 annual probability) (Hubbard et al., 2014). The depth of inundation will be discussed in more detail in the responses to Data Requests 59, 60, and 62.

On September 16, 2015, a tsunami was generated by a powerful earthquake that occurred off the coast of central Chile. According to the United States Geological Survey (USGS), the quake registered Magnitude 8.3. Tsunami advisories were issued for parts of Southern California, including the Ventura Coast. Waves up to 13 inches reached Ventura Harbor by the following morning. No damage or impacts along the California coast were reported (Accuweather, 2015). No damage or impacts to the beach or dunes in front of Mandalay Generating Station (MGS) were observed.

Over the more than 60 years that the MGS has been in operation, there have been no impacts or damage to the dunes from tsunamis.

Wave and Storm Surge

Waves and storm surge could potentially cause flooding at the project site if the combination of storm surge and the waves were large enough to completely erode the dunes, which is highly unlikely.

Over the more than 60 years that the MGS has been in operation, there have been no impacts or damage to the dunes from waves or storm surges.

Storm Surge and Tides

Data on extreme water levels were reviewed. Table 47-1 lists the available extreme observed water levels for Port San Luis, north of Oxnard; and at Santa Monica, south of Oxnard. Data on extreme water levels were not available for the Santa Barbara gage. The maximum recorded surge varied from 0.62 foot (7.4 inches) to 1.54 feet (18.5 inches), with an average of 1.1 feet. However, the storm surge at the peak tidal elevation is usually less than the maximum storm surge, because the peak surge typically does not occur at the peak water level. The storm surge at the peak tidal elevation varied from 0.25 foot (3 inches) to 1.14 feet (13.7 inches), with an average of 0.65 foot (7.8 inches).

Twelve years of tide data are available from the Santa Barbara tide gage. These data were fit to the generalized extreme value (GEV) probability distribution, which provides a probability associated with extreme water levels that include storm surge. Figure 47-1 shows the probability distribution for the data. Because only limited data were available for Santa Barbara, the National Oceanic and Atmospheric Administration (NOAA) report also included 2-year, 10-year, and 100-year water levels for Santa Monica, Port San Luis, Rincon Island, and Los Angeles on the graph. The upper 95 percent confidence bound is also provided from the Los Angeles data, because it has the longest period of record (90 years). The results show that the 100-year extreme tide level at the site is about 7.8 feet.

Table 47-1
Extreme Water Levels and Surge in and Near Ventura County

Station and Date	Maximum Predicted Water Level (feet)	Maximum Observed Water Level (feet)	Maximum Observed-Maximum Predicted (feet)	Maximum Storm Surge (feet)
Port San Luis (#9412110)				
January 1, 1948	6.83	7.32	0.49	0.66
December 9, 1969	6.71	7.32	0.61	1.54
January 8, 1970	6.84	7.32	0.48	1.04
November 29, 1970	6.20	7.02	0.82	1.20
January 18, 1973	6.70	7.57	0.87	0.96
January 8, 1974	6.85	7.10	0.25	0.62
January 9, 1978	6.69	7.39	0.70	0.87
January 27, 1983	6.81	7.95	1.14	1.54
August 8, 1983	6.86	7.34	0.48	0.87
January 10, 2005	6.97	7.59	0.62	1.38
Santa Monica (#9410840)				
January 10, 2005	6.92	7.66	0.74	0.95

Source: NOAA, 2015b
Note: Elevations are referenced to NAVD88

Waves

Seymour (1996) provides a list of extreme waves, greater than 4 meters in height, measured off the coast of Ventura County. The wave height and period from this data set were fit to the GEV distribution. A comparison between the wave height and period indicated no correlation between wave height and period for the large waves included in the Seymour dataset, indicating wave height and period are independent; therefore, each was fit to its own distribution. Figure 47-2 shows the probability distribution for wave height. The resulting probability distributions were used to generate a random set of wave run-up values using an average beach slope of 0.024. The average slope was estimated from five profiles cut along Mandalay Beach from the 2013 LiDAR data.

This 7.3-meter wave event occurred on January 27, 1983. It is one of the most damaging waves on record because of its height and long period. It caused damage to Oxnard Shores, but no recorded damage at the MGS facility. This El Niño storm, and other large storm events, have occurred in the past, and the resulting waves and storm surges have had no flood impact to MGS operations.

A review of Seymour 1996, cited as the source for the 7.3-meter (24-foot) significant wave height, shows the 7.3-meter 22-second significant wave to be the ninth highest wave recorded between 1900 and 1995 at Platform Harvest, west of Point Conception, and the second-longest period. The period is significant because wave energy, and therefore wave run-up, increases with period. Therefore, the 22-second period can be considered to be roughly analogous to the wave conditions expected during a 100-year event.

River Inundation

The current effective Federal Emergency Management Agency (FEMA) maps show the northern portion of the MGS property, where the proposed project will be sited, in a minimal flooding zone; and the remaining portion of the MGS property in the 0.2 percent annual floodplain (commonly referred to as the 500-year floodplain). Based on a detailed review of the FEMA flood map, it appears the 500-year floodplain is due to local flooding, and is not associated with the Santa Clara River floodplain. Therefore, no riverine water levels were considered (see Figure 47-3). The 1 percent annual chance flood is shown to be contained within the Edison Canal.

Sea-Level Rise

SLR impacts the average sea level at any given location. All predictions of the future are uncertain by definition; however, the mean of the sea-level predictions for the coast of California (relative to year 2000) is estimated to be 17.5 inches by 2030, and 55.9 inches by 2100 (NRC, 2012).

The National Research Council (NRC) report is consistent with, but broader than, the Intergovernmental Panel on Climate Change predictions (IPCC, 2013). The NRC report also provides the basis of the California Coastal Commission (CCC) SLR guidance policy (CCC, 2015).

AFC Appendix N-2 presented the SLR projections from the *Ventura County Resilience Study* (ESA-PWA, 2013). Predicted SLR, compared to year 2010, is estimated to range from 2.3 inches by year 2030 (low SLR scenario) to as much as 25.3 inches by year 2060 (high SLR scenario). These projections are similar to the results from NRC (2012), which projected SLR increase of 1.57 inches (low estimate) for the year 2030 to a high estimate for the year 2050 of 24 inches. Note that the Resilience Study and the NRC study have different base years: 2010 versus 2000.

A comparison between actual measured SLR was shown on AFC Appendix N-2, Figure 2, and the 2030 predictions illustrates the conservatism in the predictions. The 14-year record of actual SLR (based on Figure 2 and the 2000 to 2009 rate of 2.66 millimeters per year [mm/year]) is approximately 1.47 inches. Making a conservative assumption that the rate of SLR increases to three times the average twentieth-century rate (2.1 mm/year) to 6.3 mm/year for the next 16 years, the increment would only be 3.97 inches, for a total 2000 to 2030 rise of 5.4 inches. This is lower than the lower-bound of the NRC predictions.

Combined Inundation

Table 47-2 shows the water-surface elevation for selected return periods and annual probabilities for various inundation sources. This allows estimates of water levels for different combinations of inundation sources. For example, the maximum water level, assuming a

100-year tide with storm surge plus 100-year wave, is 17.91 feet, with a return period of 10,000 years (100 years times 100 years). For the case with a tsunami from the Goleta #2 landslide plus a 100-year extreme tide plus a 100-year high wave, the water level would be 32 feet, with a return period of 100 million years (10,000 × 100 × 100).

The data in the table can also be used to define a scenario with a given return period, and calculate the water level. Scenario examples with a 100-year return period could include:

- 50-year extreme tidal elevation with a 2-year wave height would have an estimated water level of 13.6 feet.
- 50-year wave height with a 2-year extreme tidal elevation would have an estimated water level of 16.68 feet.

Examples of inundation scenarios with a 500-year return period could include:

- 50-year extreme tidal elevation with a 10-year wave height would have an estimated water level of 15.4 feet.
- 50-year wave height with a 10-year extreme tidal elevation would have an estimated water level of 16.84 feet.

Note that the above return periods are based on annual probabilities, indicating the combined return period for the simultaneous occurrence within the same year, not necessarily the same day; therefore, they provide a conservative estimate of return period. Also, even if an extreme wave occurs, it is just as likely to occur during low tide as high tide, thereby reducing the predicted combined water level by several feet.

Table 47-2 also includes the calculated values of wave run up and maximum potential erosion (discussed in more detail under Applicant's response to DR 54) based on a monte carlo analysis of the probabilities of the input data shown in the table. This means that the values for run up and dune erosion for a given return period are not associated with the input values for that same return period. For example, the 10-year run up is not a function of the 10-year wave height and 10-year tidal elevation.

The wave run up scenarios for the 100-year and 500-year events would result in water levels well below the top of the beach dunes which are at approximately 20 to 35 feet. Therefore, the proposed project would not be impacted by a 100-year or 500-year flood event.

The 100-year flood event has a 1 percent chance of occurring in any given year and a 26 percent chance of occurring over the 30-year project life. The 500-year flood event has a 0.2 percent chance of occurring in any given year and 6 percent chance of occurring over the 30-year project life.

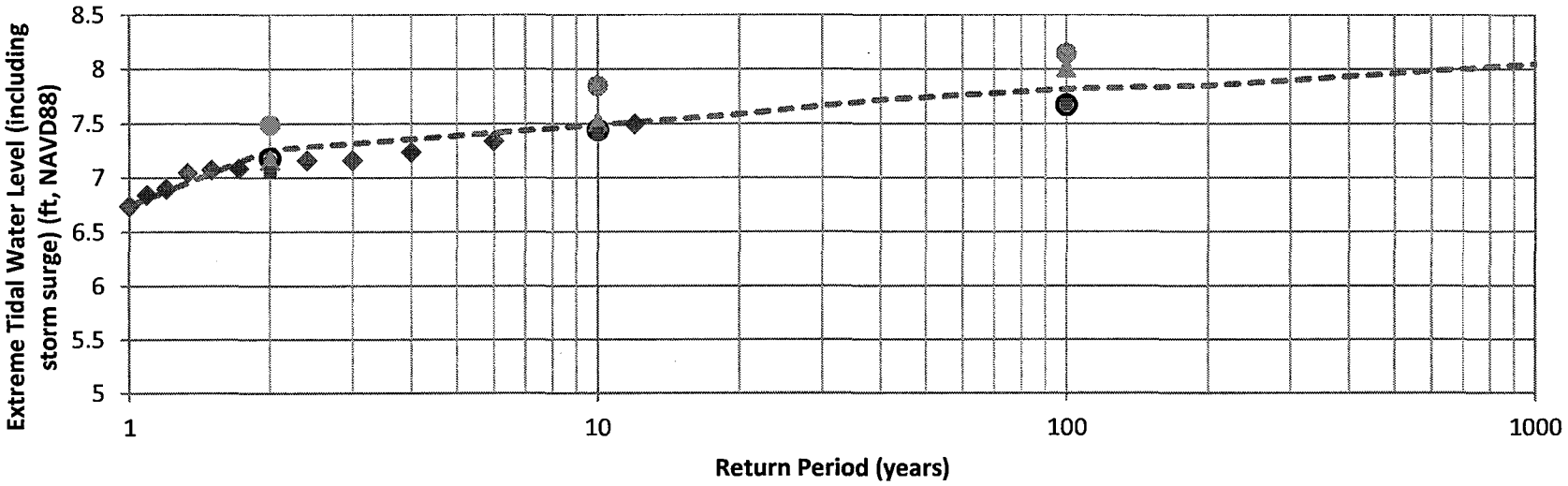
Any predictions of SLR beyond the next decade and beyond the "Low" or "Medium" projections are inherently very uncertain. Nevertheless, with the high-scenario SLR, the total water level (tide plus runup) elevations shown in Table 47-2 would be increased by approximately 2.8 feet (i.e., assuming approximately 24 inches of SLR by 2050).

Table 47-2
Cumulative Inundation Sources
at the P3 Site and Corresponding Annual Probabilities

		Input Values				Calculated Values	
Return Period (years)	Annual Probability of Exceedance	Tsunami Water Surface Elevation[1] (feet)	Extreme Tidal Elevation (feet)	Wave Height (feet)	Wave Period (second)	Wave Run Up[2] (feet)	Maximum Potential Erosion[3] (feet)
2	0.5	0	7.28	6	18.25	7.6	24.3
5	0.20	0	7.39	7.1	20.2	8.7	70.5
10	0.10	0	7.44	7.8	21.3	9.4	95.2
25	0.04	0	7.53	8.7	22.3	10.0	125
50	0.02	0	7.60	9.4	23.0	10.5	145
75	0.013	0	7.8	9.7	23.3	10.8	155
100	0.01	0	7.81	10.1	23.5	11.0	163
200	0.005	0	7.85	10.7	23.9	11.5	179
500	0.002	TBD	8.0	11.6	24.4	12.1	204
1,000	0.001	TBD	8.05	12.3	24.6	12.5	229
10,000	0.0001	14.5[1]	8.5	14.5	25.3	13.1	304

Notes:

1. Assumes the tsunami occurs at high tide.
2. Excludes tsunami.
3. Maximum potential erosion for annual probabilities shown in table based on Komar (1999) method to calculate dune erosion. See response to DR 54.



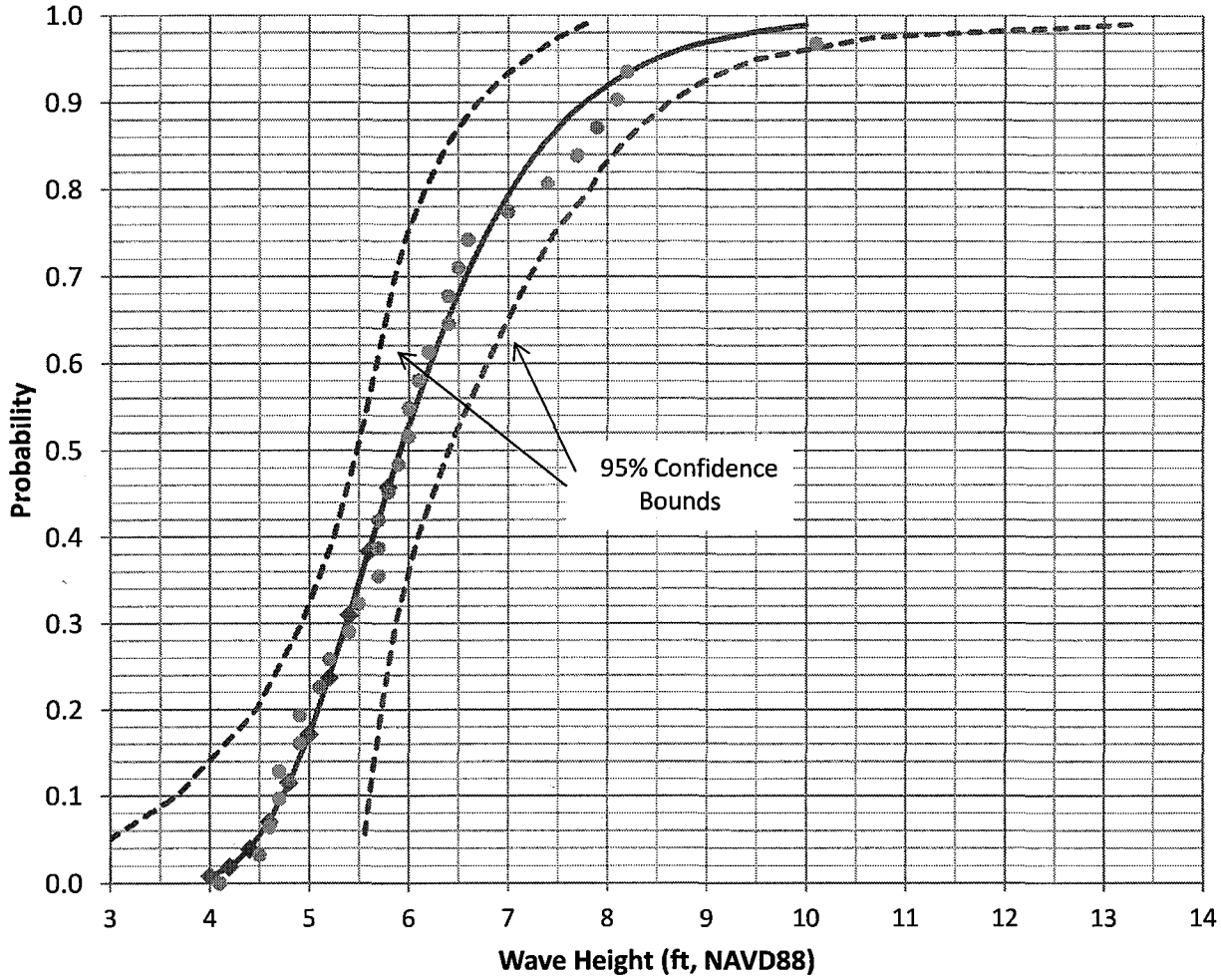
10/01/15 hk \\1578sr-w2k03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Source: NOAA, 2015.

PROBABILITY DISTRIBUTION FOR EXTREME TIDAL WATER LEVEL WITH STORM SURGE

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 47-1



10/01/15 hk \\1578sr-w2kf03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Source: Seymour, 1996.

GENERALIZED EXTREME VALUE PROBABILITY DISTRIBUTION FOR STORM WAVE HEIGHT

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 47-2

Source: FEMA Flood Map Service Center (https://msc.fema.gov/portal/search?AddressQuery=oxnard%2C%20california), 2015.

Flood Hazard Zones

- 1 PCT ANNUAL CHANCE FLOOD HAZARD
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- AREA OF MINIMAL FLOOD HAZARD
- AREA WITH REDUCED FLOOD RISK DUE TO LEVEE
- REGULATORY FLOODWAY

0 1/2 1 MILES

FEMA FLOOD HAZARD MAP

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 47-3

DATA REQUEST

48. Please provide the NOAA LiDAR data used in the sea level rise Technical Memorandum. Appendix N-2, p. 5.

RESPONSE

The Light Detection and Ranging (LiDAR) data and bathymetry data can be obtained from the following link:

2013 NOAA Coastal California TopoBathy Merge Project Department of Commerce, NOAA, National Ocean Service, Office for Coastal Management, (PUBLICATION DATE 2015-02-18

PUBLICATION PLACE: Charleston, South Carolina

PUBLISHER: NOAA's National Ocean Service, Office for Coastal Management

ONLINE LINKAGE: http://coast.noaa.gov/dataviewer/index.html?action=advsearch&qType=in&qFld=ID&qVal=2612

ONLINE LINKAGE: ftp://coast.noaa.gov/pub/DigitalCoast/lidar1_z/geoid12a/data/2612

ONLINE LINKAGE: http://coast.noaa.gov/dataviewer

ONLINE LINKAGE: http://coast.noaa.gov

DATA REQUEST

49. The sea level rise analysis failed to consider the impact of flooding from the Edison Canal. Please revise the analysis to consider the cumulative effect of a tsunami, wave and storm surge flooding, riverine inundation, dune erosion, and Edison Canal flooding.

RESPONSE

Edison Canal is a 2.5-mile-long, manmade canal. The entrance to the canal is at the northern end of the Channel Islands Harbor under Channel Islands Boulevard; approximately 2 miles from the harbor entrance (see Figure 49-1).

The harbor entrance is between two jetties and is protected by a parallel offshore breakwater. There are two small beaches (Kiddie Beach and Hobie Beach) near the harbor entrance that the United States Army Corps of Engineers (USACE) created when it constructed the harbor. These beaches were specifically designed as surge beaches to absorb the impact of tidal surges that would otherwise damage facilities or boats in the harbor (LARWQCB, 2007).

As described in the Applicant's response to California Energy Commission (CEC) Data Request 41, the canal dimensions are approximately 10 feet deep and 40 to 100 feet wide in the vicinity of the MGS intake. The depth of water fluctuates with the tide and ranges from approximately 2.5 to 7.5 feet MLLW (or approximately 2.3 to 7.3 feet NAVD88)[2]. Profiles of the canal at three locations near MGS are provided in Figures 49-2 and 49-3, respectively. As shown on Figure 49-4, freeboard in the canal is on the order of approximately 6 to 7 feet.

Application for Certification (AFC) Figure 2.8-1 shows the topography in the vicinity of the canal. The MGS roads and parking lot near the canal are at elevation 12 feet NAVD88 or more. Most of the canal banks on the Mandalay property are greater than 14 feet in elevation, although they decrease to about 12 feet at the head of the canal. An extreme tidal elevation, as shown in Table 47-2, is unlikely to exceed 8 feet. The maximum observed water levels at NOAA gages at Los Angeles, Santa Barbara, Port San Luis, and Rincon Island are all less than 8 feet. The historical peak at Santa Monica is 8.3 feet NAVD88, or about 0.3 foot above the 100-year water level.

The Goleta #2 tsunami could have an elevation of over 14 feet if it occurs at high tide; if it occurs at low tide, it would only have an elevation of about 10 feet. However, it would be unlikely for the tsunami to enter the Channel Island Harbor and then travel up the Edison Canal without considerable loss of energy due to the physical geometry of the harbor, so the water surface elevation at the end of the canal would be less than 14 feet.

With SLR, the extreme tides would increase. Assuming an increase in sea level of 24 inches by the year 2050 the extreme water levels in the canal would be about 10 feet, that is, approximately 8 feet for a 100-year (or more) return period tide, plus 2 feet of high-scenario SLR. The water level would be expected to stay within the canal, but freeboard at the head of the canal (i.e., at the MGS inlet) would be reduced by about 2 feet.

[2] Conversion of elevation from MLLW to NAVD88 is shown on AFC Figure 2.8-1. Elevation in MLLW minus 0.155 equals elevation in NAVD88.

Because large waves could not travel through the harbor and up the canal, the water level in the canal would not be expected to increase due to waves from the Pacific Ocean.

FEMA maps (see Figure 47-3) do not indicate flooding along the Edison Canal from riverine sources, so there would be no increase in water level in the canal from riverine flooding.

10/01/15 hk \\1157lsr-w2k03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

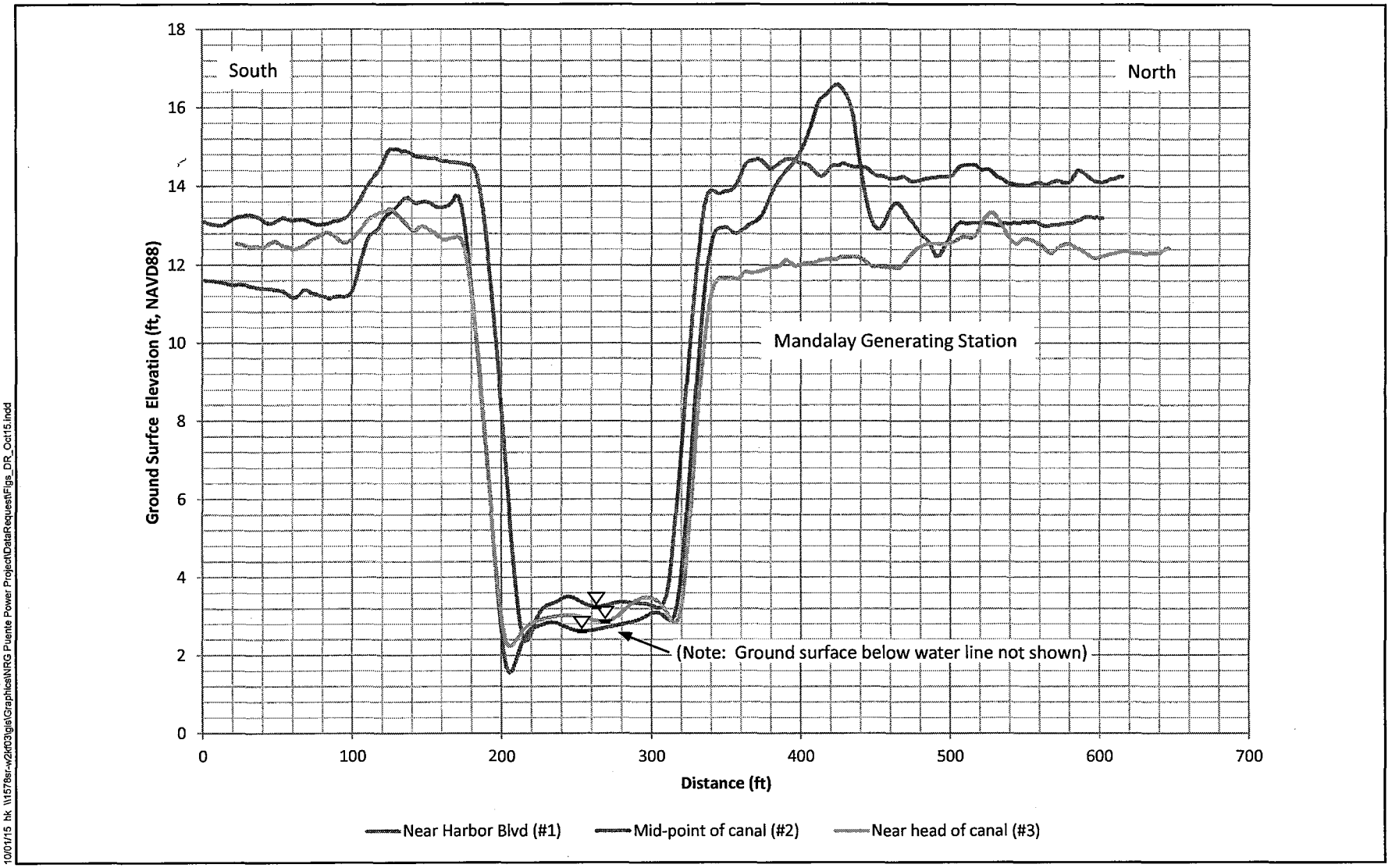
Source: Google Earth Pro., 2015.

0 0.5 1 MILES

VENTURA COAST

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 49-1



10/01/15 hk \\11578sr-w2kf03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Source: NOAA, 2013.

Note: See Figure 49-3 for section locations.

CANAL PROFILES

NRG
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FIGURE 49-2

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CANAL SECTION LOCATIONS

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 49-3

10/01/15 hk \\1578sr-w2k803\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Source: NRG, 2015.

EDISON CANAL FREEBOARD AT HIGH TIME

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 49-4

DATA REQUESTS

50. The sea level rise analysis is difficult to evaluate without a detailed topographic map showing the elevation of the dunes and levees protecting the Project site. Please provide a detailed topographic map and three dimensional diagram showing dune and levee elevation and project site elevations.

RESPONSE

The detailed existing topographic map for the entire MGS, including the proposed project site, is shown on AFC Figure 2.4-2. A three-dimensional image based on this topographic survey information and the LiDAR data is provided as Figure 50-1.

10/08/15 hk \\1578sr-w2kf03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Source: Ground Elevation data 2013 NOAA Coastal California TopoBathy Merge Project, MHHW from NOAA Santa Barbara tide gage 9411340, http://tidesandcurrents.noaa.gov/datums.html?id=9411340

Notes:
1. Water level shown on image is existing MHHW.
2. Elevation is exaggerated 2x.

3-DIMENSIONAL IMAGE

NRG
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FIGURE 50-1

DATA REQUEST

51. The AFC's analysis of wave and storm surge flooding indicates the worst case run-up elevations would be 20 to 25 feet. Please identify the vertical datum used to calculate this height.

RESPONSE

The datum is NAVD1988, consistent with the topographic map referenced in the Response to Data Request 50, and included as AFC Figure 2.4-1.

DATA REQUEST

52. As the dune elevation ranges from 20 to 30 feet, the AFC's analysis indicates that sea level rise plus wave and storm surge flooding could overtop the dunes along sections that are 20 to 25 feet high. The AFC dismisses this potentially significant impact by arguing the beach is now stable and would not erode as assumed in the worst case scenario. AFC, Appendix N-2, p. 4. Even assuming this is correct, this is a significant impact that should be mitigated. Please identify the basis upon which you conclude that the beach is stable and not subject to erosion.

RESPONSE

In relation to the discussion below, and as presented in AFC Appendix N-2, beach stability refers to the medium to long-term trend in beach size and morphology. An erosive beach is one that is shrinking; and an accreting beach is one that is growing over the medium to long term. In the short term (e.g., one to several years), a stable beach may grow or shrink, just as an erosive beach may see growth under the right conditions. The Applicant concluded that the beach fronting the project site is stable, and not subject to medium- to long-term erosion. This conclusion is based on the following:

- There is no evidence that the beach and dunes were impacted by the large wave event that occurred in 1983. This event was highlighted in the 2013 *Coastal Resilience Ventura Coastal Hazards Mapping* report prepared for Nature Conservancy (ESA-PWA, 2013).

- Since 1947, the beach width has grown by more than 300 feet (see AFC Figure 4.15-7, which shows the growth in width from 1947 based on aerial photos; also see Figure 56-2 in response to Data Request 56). The width is approximated as the distance from the outfall headwall to the water line at the time of the photo. The estimate is approximate because the water level changes with the tides and season. However, all the photos, taken at different times over the decades, are consistent in showing the continual increase in beach width. During this period, SLR has been 0.004 foot per year (1.34 millimeters per year, as measured at the Santa Monica gage [NOAA, 2015b]). This amounts to about 3 inches since construction of the original power plant approximately 60 years ago. Although the historical rate of SLR is less than the predicted future rate, the fact that the beach has grown in width indicates a stable beach and sea level has not been a significant factor in the observed beach change. We also note that for the projected SLR scenario of 24 inches by 2050 to occur, the rate of SLR would need to increase by more than tenfold to 14.1 mm/yr.

- In the 1950s and 1960s, a paved road ran along the beach just above the outfall headwall. The road is currently buried about 3 to 4 feet beneath the sand (based on an exploratory excavation done in 2014) and is not maintained. As can be seen in the photos included with the Applicant's response to Data Request 64, the dunes have expanded farther towards the beach and ocean, and the old road is now partially covered by new dunes, indicating an increase in beach volume as well as width. The dunes' growth would appear to have been limited primarily by the outflow from the MGS outfall, rather than by erosion caused by extreme water levels or storms. This is indicated by the larger width in the dune field farther south from the outfall, where the outfall discharge impacts the beach less.

- With SLR, if the supply of sand from the north is not sufficient to keep up with SLR, the beach will contract. The existing slope of the beach averages approximately 3 percent, based on the 2013 LiDAR data. Assuming the high-scenario SLR of 24 inches by 2050 and that the beach slope remains the same, the beach would be expected to shrink by about 70 feet (24 inches/0.03/12 inches/foot). Over the expected 30-year life of the proposed project (2020 through 2050), the high-scenario SLR rate is considered to be extremely conservative, considering that recent historic rate of SLR is considerably less than the predicted future rate. Assuming the low or medium SLR scenarios, the estimated beach reduction would be on the order of about 20 or 45 feet, respectively. The *2013 Coastal Resilience Study* (specifically, Figure 16 in that report) shows that the sediment yield from the Santa Clara and Ventura Rivers should remain about the same as the historical yield until about 2050. The scenario presented in AFC Appendix N-2 was a "what if" scenario and not a prediction. The existing data indicate that loss of beach is unlikely to occur in the near future.

DATA REQUEST

53. Please provide all documents relied upon to support your answer to Data Request 52.

RESPONSE

The links for documents relied upon to support the Applicant's response to Data Request 52 are provided below:

ESA-PWA, 2013. *Coastal Resilience Ventura, Final Technical Report for Coastal Hazards Mapping*. Prepared for The Nature Conservancy. July 31. http://maps.coastalresilience.org/ventura/methods/CRV_Hazards_Mapping_Technical_Report.pdf

Komar, P.D., W. McDougal, J.J. Marra, and P. Ruggiero, 1999. The Rational Analysis of Setback Distances: Applications to the Oregon Coast. *Shore & Beach* Vol. 67, No. 1, pp. 41-49. January. Available online for purchase at: http://www.researchgate.net/publication/257921997_The_Rational_Analysis_of_Setback_Distances_Applications_to_the_Oregon_Coast.

NOAA (National Oceanic and Atmospheric Administration), 2015b. Tides and Currents. http://tidesandcurrents.noaa.gov/.

DATA REQUEST

54. Please provide any analysis conducted by NRG or its consultants of erosion of the coastal dunes that abut the Mandalay Bay site.

RESPONSE

As shown on AFC Figure 4.15-4 (same as AFC Appendix N-2, Figure 4), the distance between the toe of the dunes and the existing water level at MHHW is up to approximately 500 feet.

As presented in AFC Appendix N-2, the beach abutting MGS has widened by more than 300 feet since 1947, based on a comparison between the 2014 photograph and the 1947 photograph. The photographs were not necessarily taken at the same tidal phase or season. The average daily tidal horizontal variation is about 75 feet, so the increase in beach width was conservatively adjusted to be approximately 200 feet instead of 300 feet, as indicated on the photos. Therefore, the overall average rate of accretion from 1947 to 2014 is approximately 2.9 feet per year (i.e., accretion of 200 feet over 68 years), or approximately 0.9 meter per year.

The Applicant used the information presented in the *Coastal Resilience Report* (ESA-PWA, 2013) to estimate the amount of shoreline erosion expected over the life of the project. Table 7 in the *Coastal Resilience Report* provides projected erosion rates in meters per year at Mandalay Beach Road for low, medium, and high SLR scenarios. Using these rates, the estimated amount of erosion for Mandalay Beach due to SLR was estimated (see Table 54-1). Under worst-case conditions (i.e., high SLR), the beach could erode about 80 feet from its current location by year 2050. This is similar to the estimate of approximately 70 feet calculated from existing beach slope and the high SLR rate of 24 inches over 30 years as described in the response to DR 52. This assumes a decrease in the historic availability of sand. As discussed below, the availability of sand would be expected to counteract the erosion caused by SLR.

The *Coastal Resilience Report* also recommends including potential erosion by a 500-year storm wave event. This value was computed by ESA-PWA to be approximately 46 meters, or approximately 150 feet. The method used by the ESA-PWA analysis (Komar, 1999) is a geometric model that provides the "potential most-extreme erosion," and the authors of the method note that the actual erosion experienced could be considerably less. A major shortcoming of the method is that it assumes instantaneous erosion of the dune due to wave attack; whereas the extreme water level may last for only a short while, and for much of the tide cycle the water level will likely be below the toe of the dune, and no erosion will occur. In addition, for the dune erosion to continue, the eroded sediment needs to be transported cross-shore to deeper water. Sediment deposited lower down on the shore face due to erosion of the dune at the back of the beach may reduce the ability of future waves to erode the dune.

Based on the methodology presented in the *Coastal Resilience Report*, the coastal hazard zones are developed from three components: historic erosion, additional erosion due to SLR, and the potential erosion impact caused by a large storm wave event (e.g., 100-year or 500-year). Therefore, the total estimated worst-case erosion for Mandalay Beach in front of the project site would be:

- Historic erosion (2.9 feet accretion/year from 2015 to 2050) = -101 feet
- Erosion due to SLR (high SLR scenario) = 91 feet
- Total Erosion = -101 +91 = -10 feet (beach stays about the same, i.e., average accretion equals erosion due to SLR)

- Erosion impact from 500-year storm wave = 150 feet, however there is only a 7 percent chance of a 500-year event in the next 35 years.

Erosion would be expected to be offset by continuing accretion, which has historically been 2.9 feet per year. Furthermore, storm wave erosion would be a temporary, episodic event. Therefore, even given the high SLR case outlined above, the width would remain about the same.

The Komar et al. (1999) method mentioned above was devised for predicting dune erosion, which the authors applied to the coast of Oregon to provide a rational analysis for setback distances to prevent development in areas of the greatest coastal hazards. The method is a simple geometric model based on the extreme water level, elevation of the toe of the dune, and slope of the beach. Figure 54-1 provides a diagram describing the model.

The method developed by Komar et al. (1999) was applied in a probabilistic way using probability distributions for wave height and extreme water levels. The same distributions described under the Applicant's response to Data Request 47 were used in a similar analysis. To calculate wave run-up, the wave length is also needed. Wave length is calculated from wave period. The data from Seymour (1996) used to analyze wave heights were also used to develop a probability distribution for wave period. The equation for wave run-up from Ruggiero et al. (2001) was used to calculate wave run-up.

The location of the toe of the dune was estimated from the 2013 LiDAR data. Figure 54-2 shows detailed topography of the beach in front of the MGS site. There is a sharp scarp formed between elevations 12 and 15 feet. This scarp likely represents the extent of recent storm wave run up. A toe elevation of about 15 feet was therefore used for the analysis. The method is sensitive to the selection of dune toe elevation.

Figure 54-3 shows the probability distribution for potential most-extreme erosion using the Komar method. The curve is based on over 10,000 simulations for different combinations of wave height, wave length, and tidal elevation. The simulations were performed for existing conditions, and assuming 24 inches of high-scenario SLR. From the analysis, the 100-year maximum potential erosion is estimated to be approximately 170 feet without SLR, and 270 feet with the high-scenario SLR. The potential most-extreme erosion distance of 270 feet from the scarp would extend back to approximately the fence line of the MGS property, which is at the toe of the large dune that fronts MGS. The actual erosion, however, would be expected to be considerably less, as noted by Komar (1999). The analysis assumes instantaneous erosion and transport of sediment off the beach and into deep water, when actually no erosion occurs during much of the storm, and any erosion that did occur would likely leave deposits of sand on the beach, reducing further erosion. Further evidence of the large over estimate of the Komar method for dune erosion is the observation that the beach and dunes have expanded whereas the Komar method predicts that significant dune erosion should have occurred, because even during small events such as the 10-year and 25-year, the dunes would have eroded according to the method.

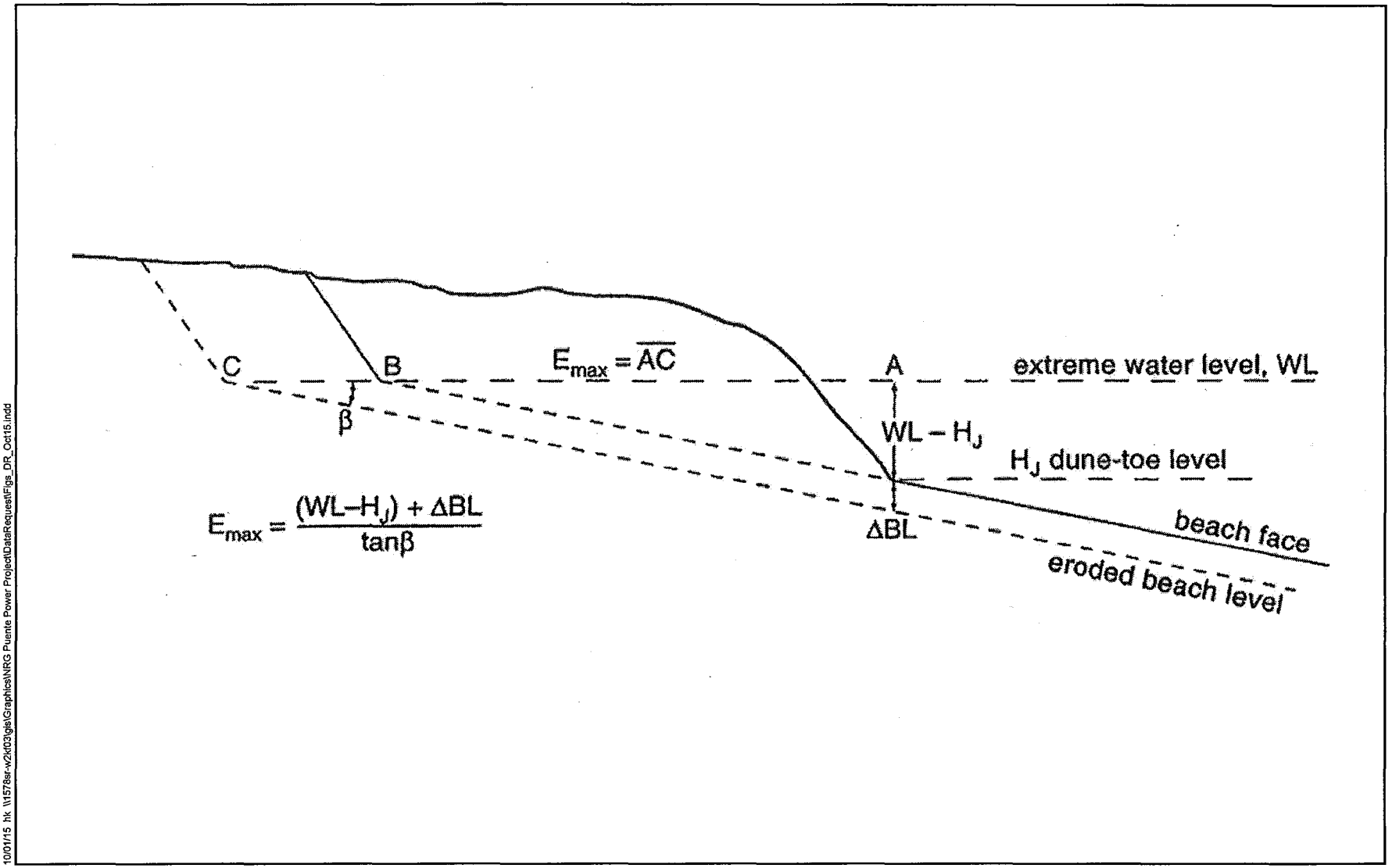
Table 54-1
Estimated Erosion Due to Sea-Level Rise

Date Range	Erosion Rate Low Sea-Level Rise (meters per year)	Estimated Erosion (feet per date range)	Erosion Rate Medium Sea-Level Rise (meters per year)	Estimated Erosion (feet per date range)	Erosion Rate High Sea-Level Rise (meters per year)	Estimated Erosion (feet per date range)
2015 to 2020	0.30	5	0.47	8	0.64	11
2020 to 2030	0.33	11	0.52	17	0.71	23
2030 to 2040	0.36	12	0.58	19	0.82	27
2040 to 2050	0.38	12	0.63	21	0.91	30
Total 2015 to 2050[1]		40		65		91

Source: ESA-PWA, 2013.

Note:

1. Proposed project life is 30 years: from 2020 to 2050. Erosion computed from 2015 to 2050.



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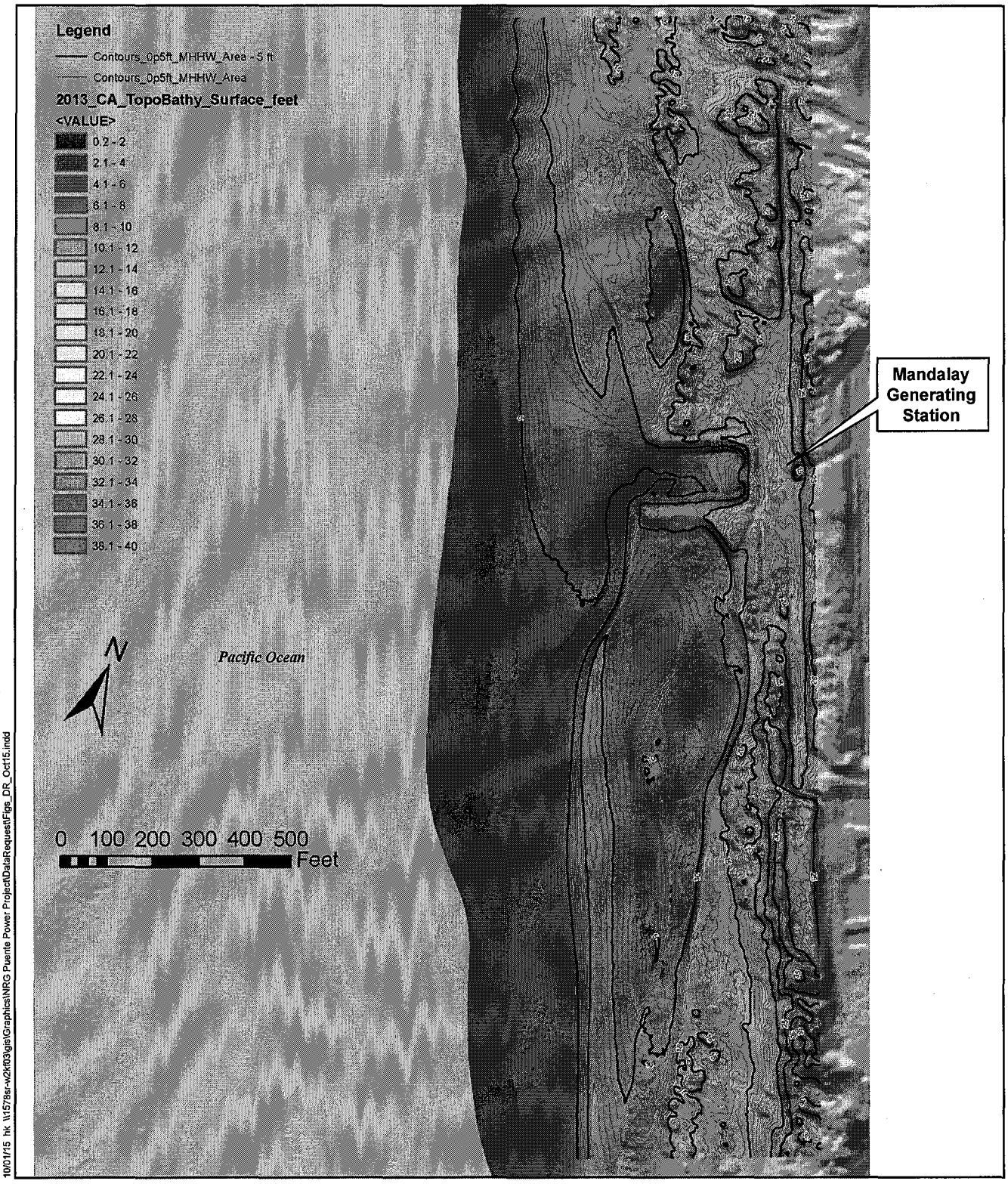
Source: Komar, et al, 1999.

GEOMETRIC MODEL USED TO EVALUATE THE MAXIMUM POTENTIAL EROSION DURING AN EXTREME STORM

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 54-1



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TOPOGRAPHIC MAP OF MANDALAY BEACH

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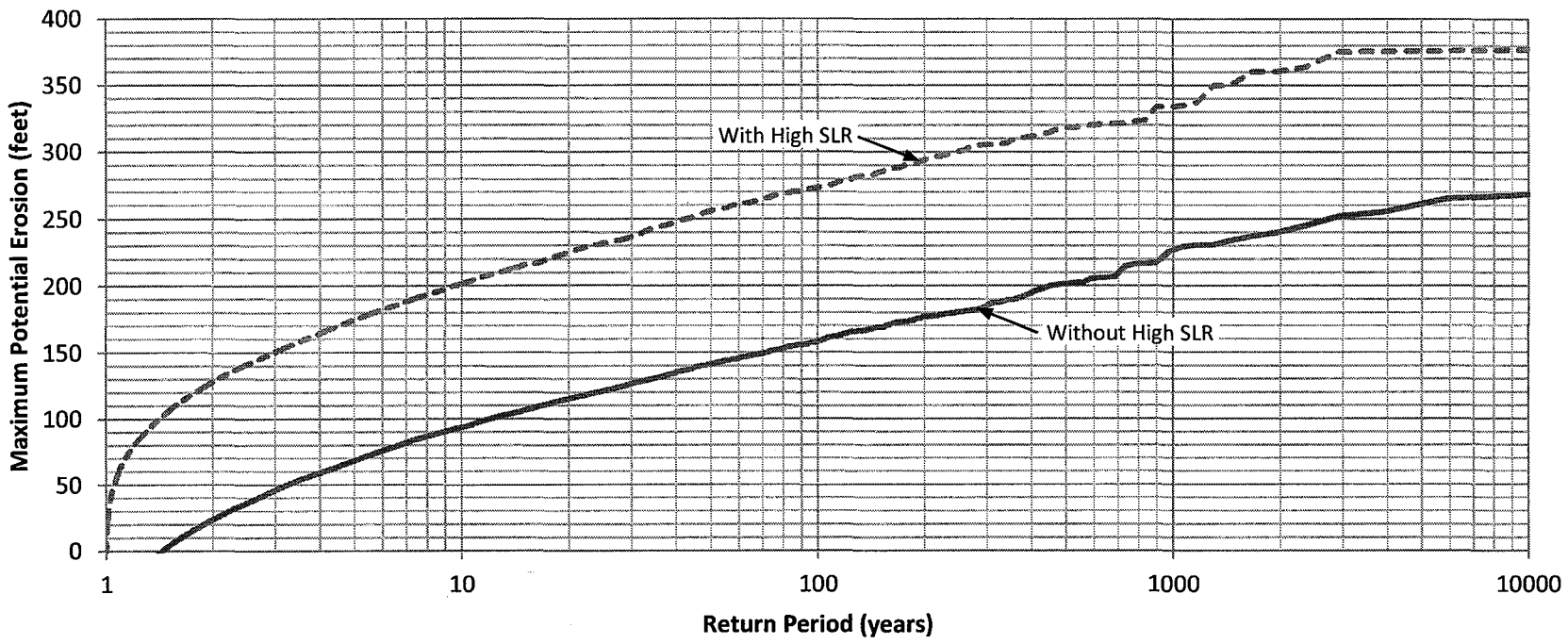
FIGURE 54-2



SLR = sea level rise
High SLR = 24 inches by 2050

PROBABILITY DISTRIBUTION FOR MAXIMUM POTENTIAL DUNE EROSION AT THE MANDALAY SITE BASED ON GEOMETRIC MODEL

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 54-3

DATA REQUEST

55. Please provide all documents relied upon to support your answer to Data Request 54.

RESPONSE

The links for documents relied upon to support the Applicant's response to Data Request 54 are provided below:

ESA-PWA, 2013. *Coastal Resilience Ventura, Final Technical Report for Coastal Hazards Mapping.* Prepared for The Nature Conservancy. July 31. http://maps.coastalresilience.org/ventura/methods/CRV_Hazards_Mapping_Technical_Report.pdf

Komar, P.D., W. McDougal, J.J. Marra, and P. Ruggiero, 1999. The Rational Analysis of Setback Distances: Applications to the Oregon Coast. *Shore & Beach* Vol. 67, No. 1, pp. 41-49. January. Available online for purchase at: http://www.researchgate.net/publication/257921997_The_Rational_Analysis_of_Setback_Distances_Applications_to_the_Oregon_Coast

Ruggiero, Peter, R. A. Holman, and R. A. Beach, 2001. Wave run-up on a high-energy dissipative beach. JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 109, C06025, doi:10.1029/2003JC002160, 2004. Available online at: http://geo.oregonstate.edu/files/geo/Ruggiero_etal_jgr_2004.pdf

Seymour, R., 1996. Wave Climate Variability in Southern California. Journal of Waterway, Ports, Coastal and Ocean Engineering. July/August. pp: 182-186. Available online at: http://ascelibrary.org/doi/10.1061/%28ASCE%290733-950X%281996%29122%3A4%28182%29

DATA REQUESTS

56. Please provide any analysis conducted by NRG or its consultants of the effect that the dredging of Ventura Harbor has on the accretion and/or erosion of the beach that abuts the Mandalay Bay Generating Station.

RESPONSE

Applicant's analysis of the effects that dredging of Ventura Harbor has on accretion and/or erosion of the Mandalay Beach included the following:

- Review of historical dredging from Ventura Harbor;
- Review of other potential sources of sediment;
- Review of changes in beach width; and
- Comparison between sediment volumes and beach width changes.

Ventura Harbor Dredging

The Ventura Harbor has a long history of problems with sediment accumulating in the navigation channels and interfering with navigation. The following history is from *Physical Model of Current-Induced Scour at Ventura Harbor*, by Steven Hughes and Bradd Schwichtenberg (undated). The work described in the document was performed at U.S. Army Engineering Research and Development Center Coastal and Hydraulics Laboratory.

Early History

Ventura Harbor was constructed by local interests in 1963, and the original design featured the arrowhead jetties, a middle groin, entrance channel, turning basin, and three berthing basins. Because of funding limitations, the arrowhead jetties were not constructed to full design length, which contributed to excessive channel shoaling, created dangerous wave conditions, and effectively closed the entrance an average of 66 days per year.

Improvements

In 1968, the USACE accepted responsibility for the entrance channel and navigation structures. The USACE constructed a 457-meter-long detached breakwater with a large sand trap in the breakwater lee to the north of the northern jetty to decrease wave heights so longshore moving sand would settle in the sand trap, thereby making navigation in the entrance channel safer. The sand trap was excavated to depths ranging between -8 meters to -12 meters MLLW to give a capacity of about 612,000 cubic meters (m^3). It was anticipated that dredging would eventually occur on a 2-year cycle. Construction of the detached breakwater and sand trap was completed in 1972.

The 1972 modifications were only partially effective. Rip currents and sand accumulation along the northern jetty allowed sand to bypass a portion of the sand trap and deposit in the entrance channel; and annual maintenance dredging was required to maintain an entrance channel project depth of -6 meters MLLW. Problematic shoaling in the entrance channel created dangerous navigation conditions; and between 1982 and 1990, there were 60 capsized or damaged vessels and 11 injuries at Ventura Harbor entrance. Hazardous conditions prevented vessels from navigating the entrance during a substantial portion of the year.

In 1989, the USACE developed modifications to the Ventura Harbor structures and entrance channel to help alleviate channel shoaling and associated dangerous wave conditions. The selected plan included construction of a 91-meter-long spur groin off the tip of the northern jetty angled toward the sand trap; construction of a new South Beach rubble-mound groin 300 meters south of the southern jetty; construction of a 91-meter extension to the southern end of the detached breakwater to provide improved wave protection for vessels and dredge equipment in the navigation channel; and deepening of portions of the navigation channel from a depth of -6 meters to a new depth of -12 meters MLLW to provide sand storage volume for advanced maintenance. The improvements were completed in 1994.

Maintenance Dredging

As the above historical discussion shows, preventing sand from bypassing the Ventura Harbor sand trap has been an ongoing problem. Regular dredging of the navigation channel is essential to keep the harbor open. Without dredging, the harbor may not continue to function, and sand would fill the channel and bypass the harbor completely.

Ventura Harbor is dredged almost every year, but in many years the sand trap on the northern side is not completely dredged, leaving inadequate storage for the next year's sediment transport from the northwest. On average, almost 600,000 yards are dredged each year. The dredged material is pumped to beaches on the southern side of the harbor. The Applicant reviewed historical dredged volumes from Ventura Harbor. These volumes are summarized in Table 56-1.

The Applicant contacted USACE regarding the dredging at Ventura Harbor (see Appendix 56-1). USACE plans to dredge the harbor in January-March of 2016. The amount that would be dredged would depend on the contractor bids they receive relative to USACE's appropriated funding for dredging Ventura Harbor in 2016. The harbor is scheduled for annual dredging, subject to the appropriation of funding. No deepening or other improvements to the harbor is planned by the USACE.

In those years where dredging is inadequate to remove all the sediment accumulated in the sediment trap, sediment appears to bypass the trap and accumulate in the navigation channel. It is highly likely that without regular dredging, the navigation channel could become unsafe and unnavigable, and could eventually lead to the closure of the harbor indicated by the need for annual dredging. In the event that dredging of Ventura Harbor were to cease, the sediment trap would quickly fill with sediment, and eventually bypass the harbor and continue down the coast to replenish the sand along Mandalay Beach. If dredging were to cease at Ventura Harbor, then sediment would either fill the harbor completely, or find a new equilibrium with prevailing tide/ wave conditions. In either case, a by-passing bar would be expected to form, and eventually the historic littoral drift would be restored. During this adjustment period, there could be some erosion on the down-drift side of the harbor. When the bypassing is restored, the erosion would stop and the beach would accrete and eventually reach its original width.

Other Sources of Sediment

Mandalay Beach is within the Santa Barbara Littoral Cell (Patsch and Griggs, 2007; BEACON, 2009). This geological unit extends from the Santa Maria River mouth to the Mugu Submarine Canyon. Mandalay Beach is in the southern portion of the Littoral Cell, between the Santa Clara River mouth and Channel Islands Harbor. Sediment supply includes sediment discharge from the Santa Clara River (approximately 1.2 million cubic yards per year), sand bypassing

Ventura Harbor (approximately 600,000 cubic yards per year), and windblown sand (approximately 10,000 cubic yards per year) (BEACON, 2009).

The Santa Clara River is the major source of sediment for Mandalay Beach, and is located between Ventura Harbor and the project site. On average, the Santa Clara River is a larger source of sediment—yielding up to twice as much as the dredging of Ventura Harbor. For example, in the wet winter of 2004-2005, the Santa Clara River discharged about 6 million cubic yards of sediment. In comparison, the amount of sediment dredged from Ventura Harbor in 2004 was approximately 600,000 cubic yards (Patsch and Griggs, 2007).

No estimates of sediment loads from the Santa Clara River are available past 2005. One moderately large flow occurred since 2005—in 2011—which may have contributed additional sediment to the beach (Ventura County Watershed Protection, 2015)

Changes in Beach Width

Changes in beach width were estimated from an examination of historic aerial photographs (see AFC Appendix N-2 and Appendix 64-1 included in these Responses to Oxnard Data Requests Set 2). For this analysis, the width of the beach was defined as the distance from the MGS outfall headwall to the water line shown in the historical aerial photographs. The Applicant recognizes that there would be some change in beach width over time due to tides and seasonal changes; however, this approach is considered reasonable to show overall trends in changes to beach width.

Figure 56-1 shows the change in beach width over time based on an analysis of aerial photographs. Figure 56-2 shows changes in beach width over time by overlaying the water lines from the photographs relative to each other. Note that there is little change in width in the early photos (indicated by a "clumping" of lines near the MGS outfall structure), then an increase in width of about 400 to 500 feet from the outfall which remains relatively constant for approximately the last 10 years.

Other studies acknowledge that the beach between the Santa Clara River and the Channel Islands Harbor has been accreting (Patsch and Griggs, 2007). Barnard et al., 2009, stated:

- The shoreline adjacent to the Santa Clara River prograded up to 129 meters as a result of the winter flood in 2004-2005. The term "prograde" with respect to a beach or coastline, means the advance toward the sea as a result of the accumulation of waterborne sediment.
- The shoreline south of the Santa Clara River mouth accreted an average of 34 meters from 1987 to 2007.
- From 2005 to 2008, the beach south of the Santa Clara River gained more than 200,000 m^3 of sediment.

Comparison between Sediment Volumes and Beach Width Changes

The dependency of the Mandalay Beach width on the dredging of Ventura Harbor and sediment discharged from the Santa Clara River was assessed by comparing the sediment volumes and the changes in beach width.

Figure 56-3A shows the volume of sediment dredged from Ventura Harbor compared to the width of the beach at the project site. Figure 56-3B also shows the volume of sediment discharged from the Santa Clara River compared to beach width.

The analysis does not show a direct relationship between the dredging from Ventura Harbor and the beach width. On the other hand, the Santa Clara River appears to be the main source of sediment that contributes to accretion of the beach.

Patsch and Griggs (2007) developed sand budgets for California's major littoral cells, including the Santa Barbara Cell where Mandalay Beach is located. They note in their discussion that the shoreline between the Santa Clara River and the Channel Islands Harbor moved seaward from the 1850s until the late 1950s, and then began to retreat. This occurred before the construction of Ventura Harbor. The accretion was due to deposition of sand from large floods on the Santa Clara River, which deposited more sand than the ability of waves to remove (Patsch and Griggs, 2007). They noted the beach retreated between 1969 and 1973, perhaps a delayed response to diminished littoral drift during the relatively dry years between 1938 and 1969 floods, aggravated by dam construction on the Ventura and Santa Clara rivers; however, this is not apparent from the data in Figure 56-2. In the 1990s, sand surpluses led to widespread coastal accretion, consistent with data shown in Figure 56-2.

Conceptually the width of beach at Mandalay should be at least partially controlled by the amount of sediment dredged from the Ventura Harbor. However, a comparison of the width of the beach estimated from aerial photographs does not show a direct relationship between the dredging and the beach width. This may be due to the large amount of sediment contributed by the Santa Clara River; which delivers about 55 percent of the sediment load to the Santa Barbara Littoral Cell.

Table 56-1
Volume of Material Dredged from Ventura Harbor and Sediment Discharged from the Santa Clara River

Year	Volume Dredged from Ventura Harbor[1, 2] (cubic yards)	Sediment Discharged from Santa Clara River[3] (cubic yards)
1964	191,000	8,877
1965	180,000	24,166
1966	143,000	2,600,577
1967	239,000	953,824
1968	257,000	29,098
1969	188,3000	24,436,445
1970	325,000	326,490
1971	111,3000	747,672
1972	17,000	165,218
1973	1,193,820	2,499,966

Table 56-1
Volume of Material Dredged from Ventura Harbor and Sediment Discharged from the Santa Clara River
(Continued)

Year	Volume Dredged from Ventura Harbor[1, 2] (cubic yards)	Sediment Discharged from Santa Clara River[3] (cubic yards)
1974	420,000	454,226
1975	160,000	416,250
1976	152,000	98,637
1977	911,000	16,768
1978	496,000	14,458,772
1979	1,021,500	997,718
1980	320,000	5,391,524
1981	812,900	112,940
1982	1,186,000	130,201
1983	142,7000	11,214,093
1984	133,2900	118,858
1985	0	14,302
1986	910,000	1,565,870
1987	363,100	493
1988	800,000	128,229
1989	230,314	493
1990	217,913	2,959
1991	377,183	869,489
1992	524,702	3,652,545
1993	486,478	11,798,520
1994	470,000	NA
1995	271,357	NA
1996	833,000	NA
1997	449,128	NA
1998	741,975	NA
1999	639,173	NA
2000	818,477	NA
2001	624,931	NA

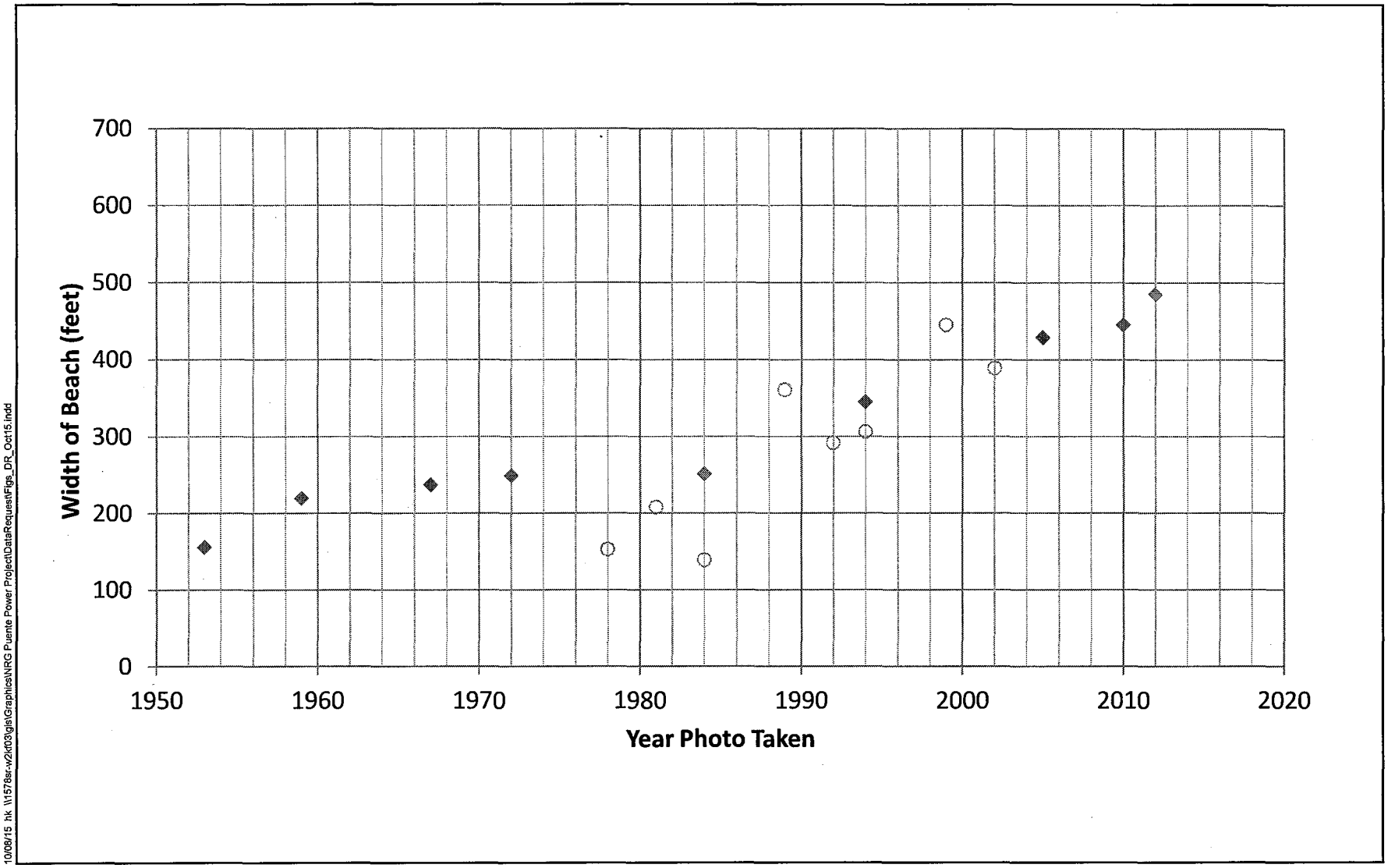
Table 56-1
Volume of Material Dredged from Ventura Harbor and Sediment Discharged from the Santa Clara River
(Continued)

Year	Volume Dredged from Ventura Harbor[1, 2] (cubic yards)	Sediment Discharged from Santa Clara River[3] (cubic yards)
2002	669,749	NA
2003	669,566	NA
2004	578,357	NA
2005	NA	6,000,000[4]
2006	NA	NA
2007	NA	NA
2008	355,000	NA
2009	379,000	NA
2010	386,000	NA
2011	316,000	NA
2012	227,000 (USACE) 273,000 (local sponsor)	NA
2013	240,000	NA
2014	440,000	NA
2015	780,000	NA

NA = not available

Notes:

1. Ventura Harbor dredging volumes for 1964 – 2004 from Patsch and Griggs, 2007.
2. Ventura Harbor dredging volumes for 2008-2015 from personal communication with USACE (see Appendix 56-1).
3. Santa Clara River sediment discharge volumes based on metric tonnes from Warrick, 2002 converted to cubic yards per year. Sediment discharge records are available starting in 1928, however to be consistent with data available for Ventura Harbor dredging, only data for the Santa Clara River starting in 1964 are included in this table. Other than episodic reporting, sediment discharge data collection ceased after 1993.
4. Source: Patsch and Griggs, 2007.



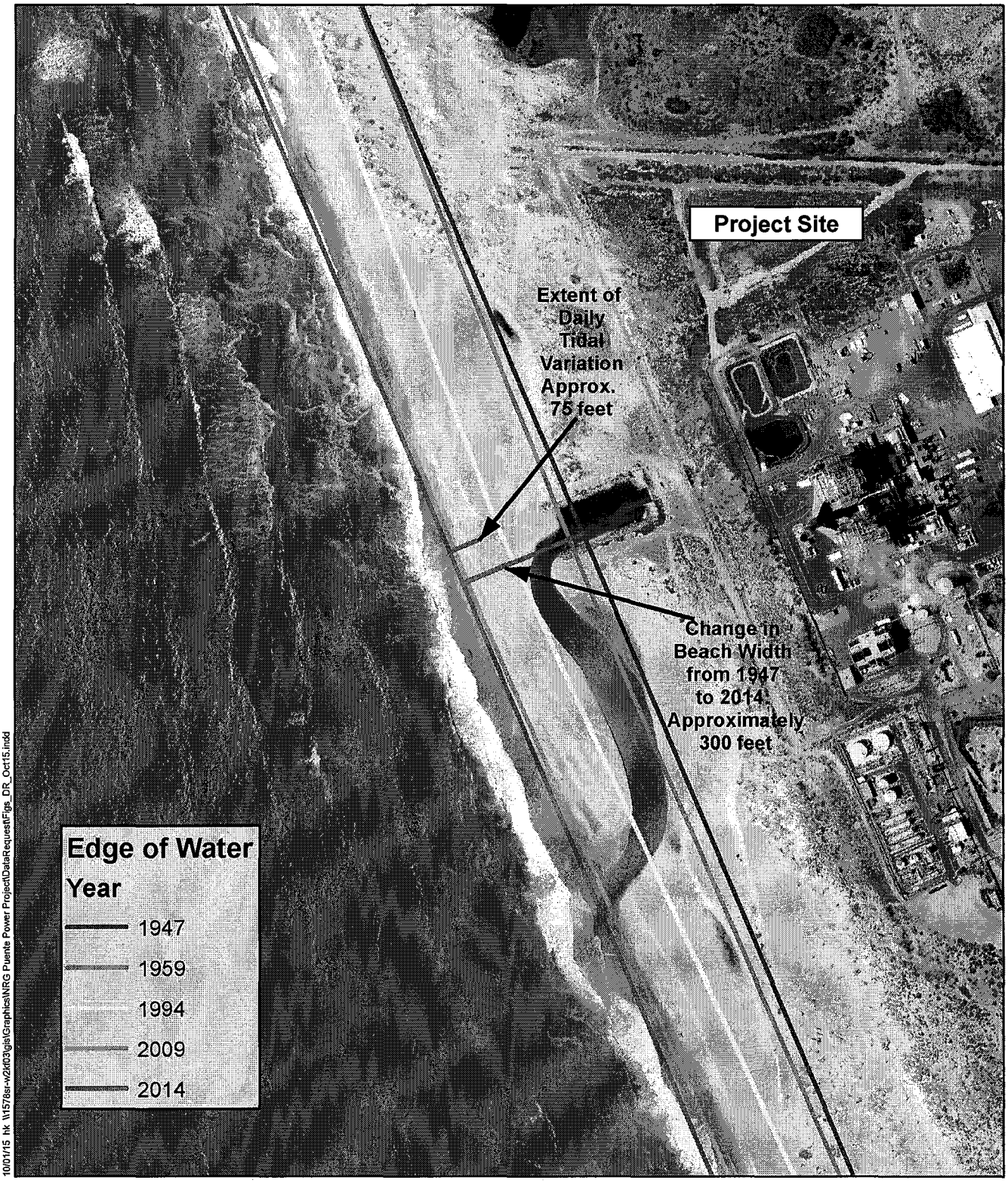
10/08/15 hk \\15780sr-w2kf03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Note: Photos provided in AFC Appendix N-2 and Appendix DR-64 in this Request to Oxnard Data Request Set 2.

WIDTH OF BEACH OVER TIME

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 56-1

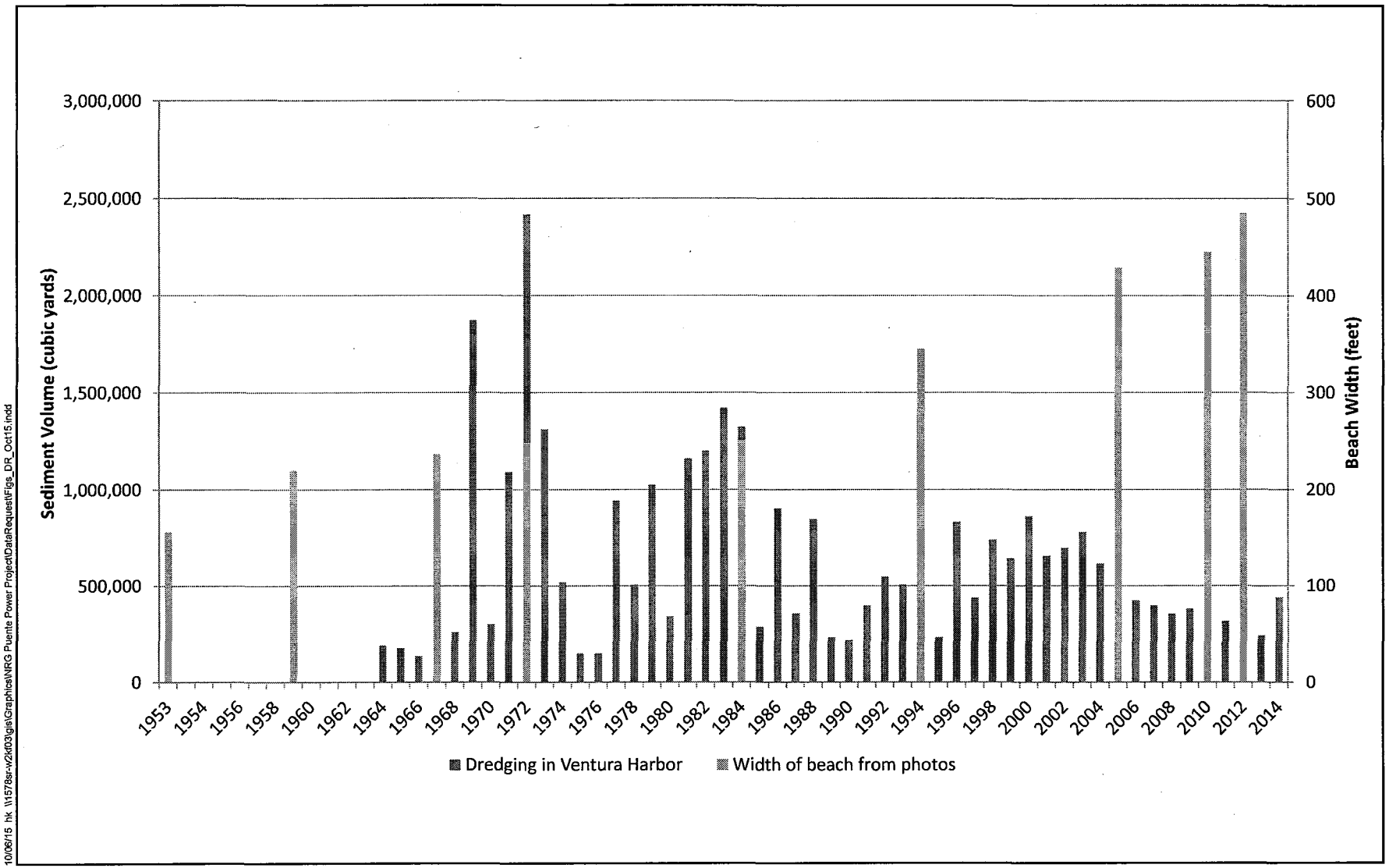


10/01/15 hk \\1578s-w2k803\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

MANDALAY BEACH 1947 – 2014

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 56-2

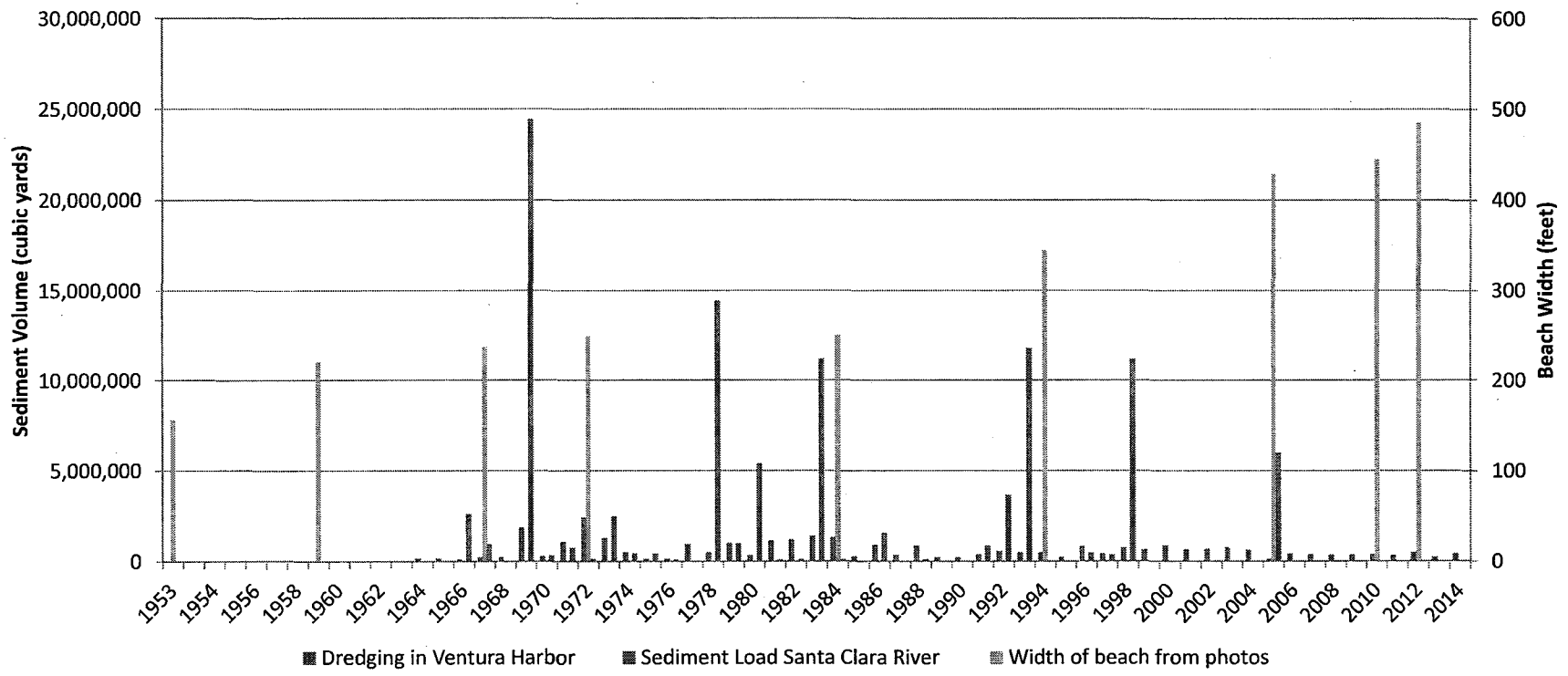


Note: Photos provided in AFC Appendix N-2 and Appendix DR-64 in this Request to Oxnard Data Request Set 2.

BEACH WIDTH COMPARED TO VOLUME OF SEDIMENT DREDGED FROM VENTURA HARBOR

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 56-3A



10/06/15 hk \\1578sr-w2k03\gis\Graphics\NRG Puente Power Project\DataRequest\Figs_DR_Oct15.indd

Note: Photos provided in AFC Appendix N-2 and Appendix DR-64 in this Request to Oxnard Data Request Set 2.

BEACH WIDTH COMPARED TO VENTURA HARBOR AND SANTA CLARA RIVER SEDIMENT SOURCES

NRG
Puente Power Project
October 2015 Oxnard, California

FIGURE 56-3B

DATA REQUEST

57. Please provide all documents relied upon to support your answer to Data Request 56.

RESPONSE

The links for documents relied upon to support Applicant's response to Data Request 56 are provided below:

Barnard, P.L., D.L. Revell, D. Hoover, J. Warrick, J. Brocatus, A.E. Draut, P. Dartnell, E. Elias, N. Mustain, P.E. Hart, and H.F. Ryan, 2009. Coastal processes study of Santa Barbara and Ventura Counties, California: U.S. Geological Survey Open-File Report 2009-1029, 904 pp. Available online at: http://pubs.usgs.gov/of/2009/1029/.

Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), 2009. Coastal Regional Sediment Management Plan, Central coast from Pt. Conception to Pt. Mugu. January. Available online at: http://www.beacon.ca.gov/assets/reports/CRSMP.pdf.

Hughes, Steven and Bradd Schwichtenberg (undated). *Physical Model of Current-Induced Scour at Ventura Harbor.* Available online at: http://cirp.usace.army.mil/Downloads/PDF/web-break99.pdf.

Patsch, Kiki and Gary Griggs, 2007. Development of Sand Budgets for California's Major Littoral Cells. January. Available online at: http://www.researchgate.net/publication/240635473_LITTORAL_CELLS_AND_SAND_BUDGETS_ALONG_THE_COAST_OF_CALIFORNIA_Proposal_to_the_California_Coastal_Sediment_Management_Working_Group_And_California_Department_of_Boating_and_Waterways.

USGS (U.S. Geological Survey), 1993. OFFICE OF SURFACE WATER TECHNICAL MEMORANDUM NO. 93.21. SUBJECT: Policy and technical guidance for conversion of sediment concentration from parts per million (ppm) to milligrams per liter (mg/L). Available online at: http://water.usgs.gov/admin/memo/SW/sw93.21.html.

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Willis, Cope M., and Gary B. Griggs, 2003. Reductions in Fluvial Sediment Discharge by Coastal Dams in California and Implications for Beach Sustainability, March. Available online at: http://www.researchgate.net/publication/228963249_Reductions_in_Fluvial_Sediment_Discharge_by_Coastal_Dams_in_California_and_Implications_for_Beach_Sustainability.

In addition, the following is provided in Appendix 56-1.

USACE (U.S. Army Corps of Engineers), 2015. Personal Communication regarding Ventura Dredging Volumes.

DATA REQUEST

58. Please identify all measures that NRG considered as possible mitigation for impacts from sea level rise and coastal storms. Please state whether such measures are feasible from a legal, technical, and/or economic perspective and state the basis upon which you make this conclusion.

RESPONSE

Results of Applicant's analysis presented in the AFC and in these Responses to Oxnard Data Requests Set 2 indicate that over the expected 30-year project life, no mitigation would be required. While Applicant does not anticipate that mitigation would be required, it does note that MGS personnel conduct periodic inspections of the perimeter of the facility, including the outfall area and beach dunes. Significant observations or changes to these features would be recorded and, if improvements to address significant changes to these features are needed, the Applicant will consider improvements that would maintain the integrity of beach dunes within and/or adjacent to the MGS/P3 site. Applicant also notes that MGS personnel have observed increasing accumulation of sand that covers the Beach Road that aligns the western perimeter of the facility near the toe of the beach dunes. These observations are consistent with the aerial photographic review's conclusion that the adjoining beach is accreting.

BACKGROUND: TSUNAMI INUNDATION

The AFC's analysis for a tsunami is based on the 2009 Oxnard tsunami map, confirmed with LIDAR data. This analysis indicates a water level elevation of 10 to 15 feet. AFC Appendix N-2, p. 5. With 2 feet of sea level rise, this leaves 3 feet of freeboard on the lowest part of the 25- to 30-foot-high berms/levees. This is a very small safety margin, given the omissions from the analysis. The AFC's cumulative sea level rise analysis was based on an historic 2009 tsunami map that does not include recently reported information on the Ventura Fault and other Southern California offshore fault systems and worst case sea level rise estimates. Thus, it underestimates potential tsunami impacts. Further, the AFC's tsunami analysis fails to consider cumulative effects from other sources of flooding.

Awareness of the hazards of tsunami inundation has grown since the 2011 Japan earthquake and tsunami. This event led scientists to investigate similar fault systems in Southern California that could unleash tsunamis along the California coast. Recent geological work has indicated that the Ventura fault could cause a major earthquake that could create a tsunami that would begin "in the Santa Barbara Channel area, and would affect the coastline...down through the Santa Monica area and further south." Other work has reported active fault zones off the Southern California coast.[3] These fault systems were not considered in developing the "Tsunami Inundation Map for Emergency Planning, Oxnard Quadrangle," that the AFC relied on. AFC, Appendix N-2, Attachment 2, Inset Table 1. As a result of these studies, the California Geological Survey is studying whether it needs to revise tsunami hazard maps.[4] The resulting inundation would be "severe right along the coast."[5]

The Preliminary Geotechnical Evaluation (AFC, Appendix A, pdf 259/260) states the project site is adjacent to a mapped tsunami run-up hazard area and notes that while dunes elevated up to about 25 feet above MSL offer some protection, "due to the site location in an area mapped as susceptible to tsunami run-up hazards, the potential for tsunami run-up hazards at the site and possible mitigation techniques should be evaluated during the detailed design phase of the project." The Sea Level Rise Analysis in Appendix N-2, on the other hand, dismisses tsunami inundation as an issue because the elevation of a tsunami with sea level rise is less than the height of the berm. AFC, Appendix N-2, p. 6. This conclusion fails to consider the impact of storm surges, coastal erosion and sea level risk on the structural integrity of the dunes and berms.

[3] Mark R. Legg et al., High-Resolution Mapping of Two Large-Scale Transpressional Fault Zones in the California Continental Borderland: Santa Cruz-Catalina Ridge and Ferrelo Faults, Journal of Geophysical Research: Earth Surface, May 30, 2015; Sci-News.com, Researchers Map Active Fault Zones off Southern California, June 1, 2015, See: http://www.sci-news.com/othersciences/geophysics/science-fault-zones-southerncalifornia- 02862.html

[4] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-meventura- fault-20150420-story.html#page= 1

[5] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-meventura- fault-20150420-story.html#page= 1

DATA REQUEST

59. Please prepare a tsunami runup hazard analysis that includes the most recent information on the Ventura Fault and Southern California fault system and propose mitigation for any impacts. Your analysis should include an updated tsunami hazard map that includes all recently discovered faults.

RESPONSE

As described in the Applicant's Requests for Additional Time to Respond to City of Oxnard's Data Requests Set 2 (Nos. 48 through 67), docketed on September 17, 2015, the Applicant is requesting additional time to address this Data Request.

DATA REQUEST

60. Please revise the cumulative sea level rise analysis in Appendix N-2 to include recent information on the Ventura Fault and Southern California fault systems.[6]

RESPONSE

As described in the Applicant's Requests for Additional Time to Respond to City of Oxnard's Data Requests Set 2 (Nos. 48 through 67), docketed on September 17, 2015, the Applicant is requesting additional time to address this Data Request.

[6] J. Hubbard, J.H. Shaw and others, Structure and Seismic Hazard of the Ventura Avenue Anticline and Ventura Fault, California: Prospect for Large, Multisegment Ruptures in coastline....south." 1 "Quadrangle," 2 the Western Transverse Ranges, Bulletin of the Seismological Society of America, May 2014.

DATA REQUEST

61. Please resolve the apparent inconsistency between the Sea Level Rise Analysis and the Geotechnical Report with respect to tsunami inundation.

RESPONSE

There is no inconsistency between the Sea Level Rise Analysis presented in Appendix N-2 of the AFC and the Preliminary Geotechnical Evaluation presented in Appendix A-9 of the AFC. Both reports referenced the Tsunami Inundation Map for Emergency Planning developed by California Emergency Management Agency (CalEMA, 2009). The map was included as Figure 5 in the Preliminary Geotechnical Evaluation; and as Attachment 2 in AFC Appendix N-2.

The map shows that the project area is not in the Tsunami inundation zone. The inundation area on the map represents inundation from combining inundation results for an ensemble of source events affecting the Ventura County coastline, including the Goleta Landslide–generated tsunami. The source events used to develop the map are listed on the map (see Attachment 2 in AFC Appendix N-2)

CalEMA states that the purpose of the map is as follows:

> *This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only. This map, and the information presented herein, is not a legal document and does not meet disclosure requirements for real estate transactions nor for any other regulatory purpose.*
>
> *The inundation map has been compiled with best currently available scientific information. The inundation line represents the maximum considered tsunami runup from a number of extreme, yet realistic, tsunami sources. Tsunamis are rare events; due to a lack of known occurrences in the historical record, this map includes no information about the probability of any tsunami affecting any area within a specific period of time.*

The *Preliminary Geotechnical Evaluation* was prepared by Ninyo & Moore in November 2013. The main purpose of the Preliminary Geotechnical Evaluation report was to provide the results of the cone penetrometer testing program that was conducted to characterize the subsurface conditions in the northern portion of the MGS property. Details of the proposed Puente Power Project (P3) project had not yet been developed at this time. Ninyo & Moore did not perform any detailed tsunami hazard evaluations, other than reference the CalEMA map. The report merely acknowledged that tsunami run-up would need to be evaluated and addressed during detailed engineering design, as stated on page 12: "However, due to the site location in an area mapped as susceptible to tsunami run-up hazards, the potential for tsunami run-up hazard at the site and possible mitigation techniques should be evaluated during the detailed design phase of the project."

As part of the analysis in support of the 2015 AFC, the Applicant took a closer look at the contours shown on the CalEMA Tsunami Inundation Map, available LiDAR data (NOAA, 2015a), and the elevation of the beach dunes. The elevation of the tsunami inundation area shown on the CalEMA map appears to be at approximately elevation 10 to 15 feet. The elevation of the beach dunes, according to the March 2011 topographic survey (see AFC

Figure 2.4-2) ranges from approximately 20 to 35 feet. Therefore, as mapped by CalEMA, the Puente site is not in the tsunami inundation zone.

The Applicant, however, is revisiting potential tsunami effects in response to Data Requests 59, 61, and 62.

DATA REQUEST

62. Please evaluate the ability of the existing berm to contain the force of a tsunami that raises water elevation to the top of the berm along the entire length of the berm.

RESPONSE

As described in the Applicant's Requests for Additional Time to Respond to City of Oxnard's Data Requests Set 2 (Nos. 48 through 67), docketed on September 17, 2015, the Applicant is requesting additional time to address this Data Request.

DATA REQUEST

63. The Preliminary Geotechnical Evaluation, AFC, Appendix A-9, concludes: "The existing dunes are up to approximately 25 feet above MSL and should continue to provide protection to the site during the predicted sea level rise of 55 inches by 2100. As sea level rises, however, periodic storm surge and wave activity will impact the dunes. Future maintenance/re-building of the dunes (and berms) that border the site would provide continued protection for the project site, and reduce the impacts of projected sea level rise." AFC, Appendix A-9, p. 16. Please include these measures as mitigation for significant sea level rise impacts in the AFC or provide technical justification for excluding them. How frequent will these measures be required and what form of dedicated funding is in place to maintain these dunes?

RESPONSE

As shown on AFC Figure 2.4-1, the beach dunes range in elevation from approximately 20 to 35 feet. This is based on the detailed topographic survey of the MGS property provided by Southern California Edison. Applicant notes that Ninyo & Moore did not have this information when they prepared the Preliminary Geotechnical Report.

As presented in the Applicant's responses to Data Requests 47 and 54, adverse impacts from SLR and coastal storms are not anticipated over the expected 30-year project life, and no mitigation would be required. However, the Applicant recognizes the uncertainties inherent in predicting future conditions. SLR will be monitored and compared against current predicted values. As warranted, adaptation strategies consistent with the CCC's *Sea-Level Rise Policy Guidance* (CCC, 2015) would be implemented. These strategies could include identifying steps to modify the facility as needed to prevent risks to the project or to coastal resources, or establishing dune management actions to maintain and restore the natural dunes.

DATA REQUEST

64. Please provide any photographs or other documentation of any coastal or river flooding or coastal erosion that has occurred at the Mandalay Bay Generating station since 1966.

RESPONSE

The Applicant included several aerial photographs in Appendix N-2 that show the beach and dunes in front of MGS. Photos were included for the following years: 1947, 1953, 1959, 1967, 1977, 1984, 1994, 2005, 2009, 2010, and 2012.

Additional photographs can be found on the California Coastal Records Project's website (http://www.californiacoastline.org). Photograph sets from the 1970s through 2013 are included. To find photographs of MGS, search for "Mandalay."

The Applicant obtained and reviewed available photos taken by Pacific Western Aerial Survey for the following dates: May 16, 1978; June 15, 1981; January 11, 1984; December 10, 1986; March 23, 1989; September 1, 1992; November 1, 1994; October 7, 1999 and May 19, 2003. Copies of these photographs are included in Appendix 64-1.

DATA REQUEST

65. Please provide any photographs or other documentation showing the Santa Clara Estuary within 0.5 mile of the Mandalay Bay Generating station since 1966.

RESPONSE

See Response to Data Request 64.

Please note that the Santa Clara River is approximately 2 miles north of the project site.

DATA REQUEST

66. Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

RESPONSE

A summary of data compiled from the available MGS Operator Logs and Maintenance Invoices is provided in Appendix 66-1. The operator logs go back to 2002, as do the maintenance records of the outfall area sand management. The summary includes dates and estimated volumes of sand moved from the outfall to maintain a straight path to the ocean to prevent ponding to the north and south. Also, approximately every 5 years, windblown sand is removed from the fence line.

The first maintenance activity to straighten the outfall occurred in 2003. Prior to that time, dozers were used for damming off the outfall channel for purposes of dewatering the circulating water system.

DATA REQUEST

67. Please provide plans and locations of any tidegates or water control infrastructure that may affect the hydraulic connectivity between the site, the Pacific Ocean, and the Edison Canal.

RESPONSE

There are no tidegates between MGS and the Pacific Ocean, because there has never been a need due to the distance between the outfall structure and the ocean.

There is no tidegate or control infrastructure on the Edison Canal. There is a debris barrier that stretches across the canal banks south of Wooley Road; the Applicant understands that the purpose of this barrier is to prevent people and boaters from leaving the Channel Islands Harbor and going up the canal. The inlet for the MGS consists of trash racks and pumps. In addition, there is a recirculation line that connects the outfall pipe with the intake.

With the shutdown of MGS Units 1 and 2 in 2020, the intake of ocean water from Edison Canal for once-through-cooling purposes will cease and therefore will essentially eliminate the hydraulic connectivity between the canal and the ocean outfall at Mandalay. Small intake and discharge flows in support of MGS Unit 3 (for bearing cooling purposes) would continue, but would be limited to the operation of MGS Unit 3 (up to 200 hours per year). Connectivity is limited by mechanical valves and pumps.

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APPENDICES

APPENDIX 56-1
VENTURA HARBOR DREDGING

Personal Communication/Contact Report

Name: Kelly Bayer, AECOM

Date: May 11, 2015

Person contacted:
Jeffrey C. Cole
US Army Corps of Engineers
Project Manager -
Navigation Section
213.452.3401

Subject: Dredging of Ventura Harbor

Summary:

Contacted Jeff Cole regarding the extent of dredging of Ventura Harbor since 2008. He provided the following dredge quantities. All volumes were dredged by the USACE in the January-March timeframe of each year. In addition, as noted below, additional volume was dredged by the local sponsor (the Ventura Port District) in 2012; Jeff noted that the local sponsor contribution was atypical.

2008: 355,000 CY

2009: 379,000 CY

2010: 386,000 CY

2011: 316,000 CY

2012: 227,000 CY (USACE); 273,000 CY (local sponsor)

2013: 240,000 CY

2014: 440,000 CY

2015: 780,000 CY

Jeff stated that future dredging is subject to federal funding, and he was hesitant to predict at what frequency the harbor would be dredged in the future.

Personal Communication/Contact Report

Name: Kelly Bayer, AECOM

Date: September 30, 2015

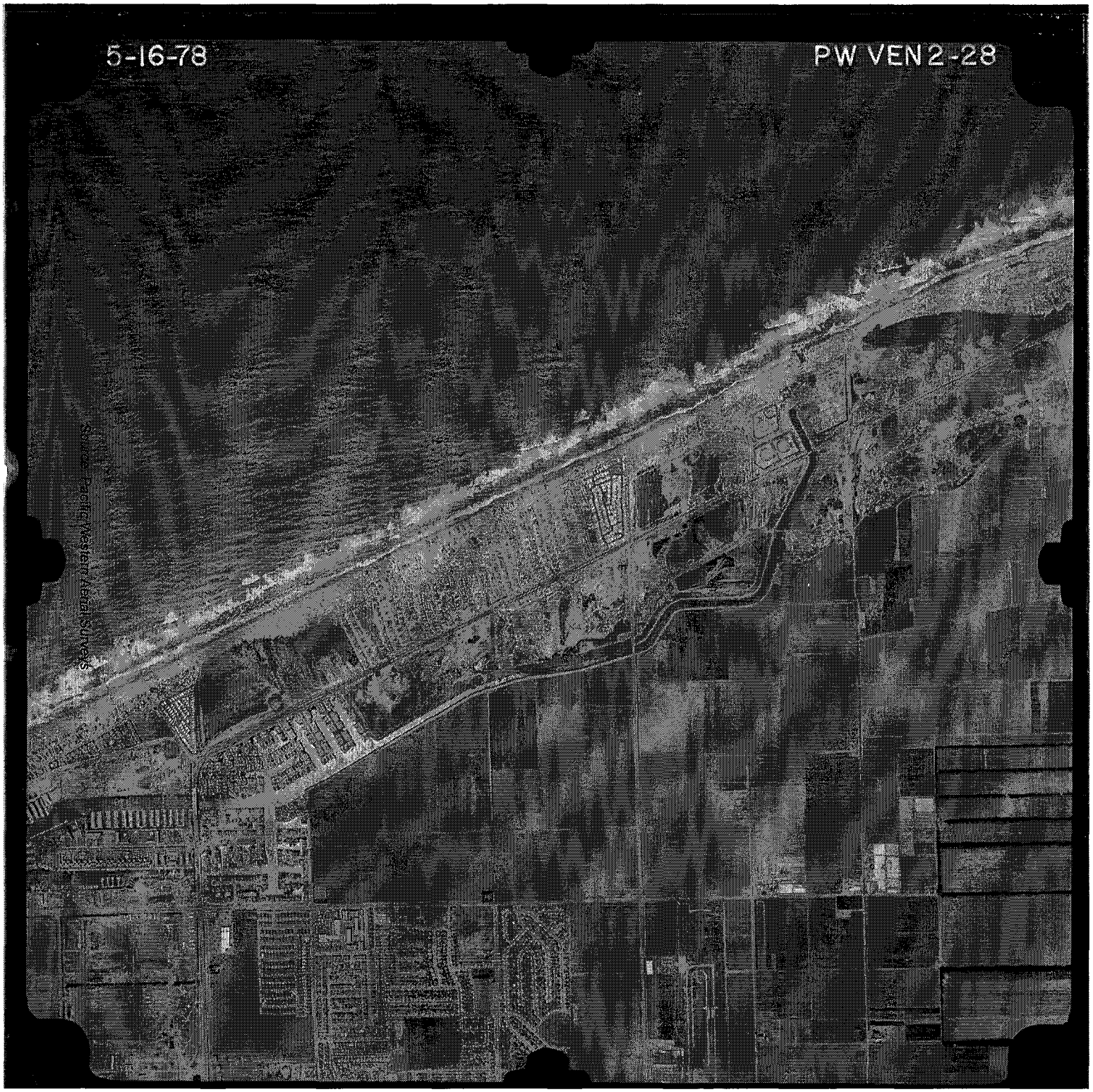
Person contacted:
Jeffrey C. Cole
US Army Corps of Engineers
Project Manager -
Navigation Section
213.452.3401

Subject: Dredging of Ventura Harbor

Summary:

Contacted Jeffrey Cole at the USACE, who I originally spoke to back in May, regarding the dredging at Ventura Harbor. He left me a detailed voicemail this morning indicating that the harbor will be dredged in January-March of 2016. He said the amount that would be dredged would depend on the contractor bids they receive (they can only dredge as much as they have funding for). He said the harbor is scheduled for annual dredging, subject to the appropriation of funding. He said no deepening or other improvements to the harbor are planned by the USACE.

APPENDIX 64-1
PHOTOGRAPHS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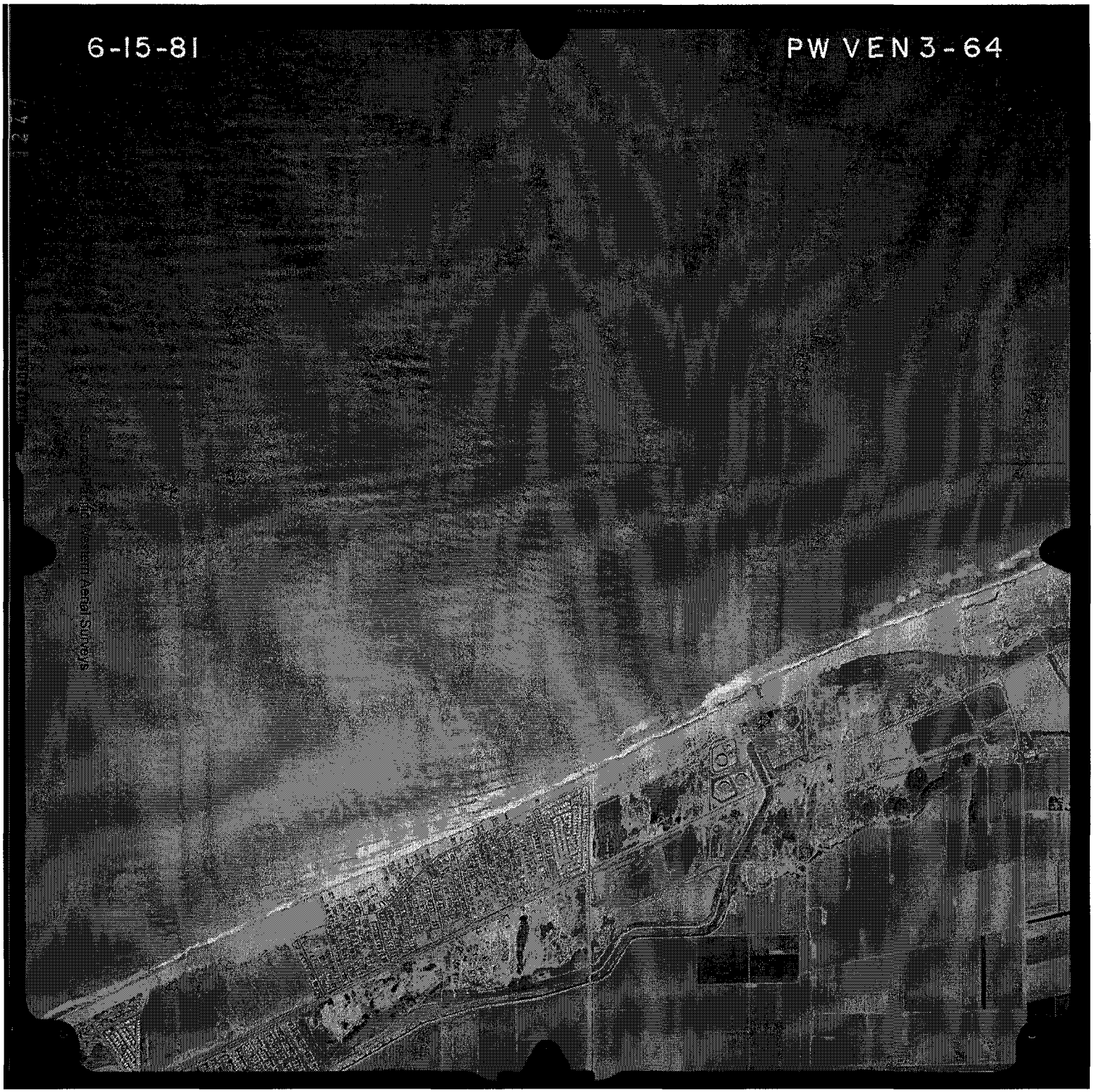
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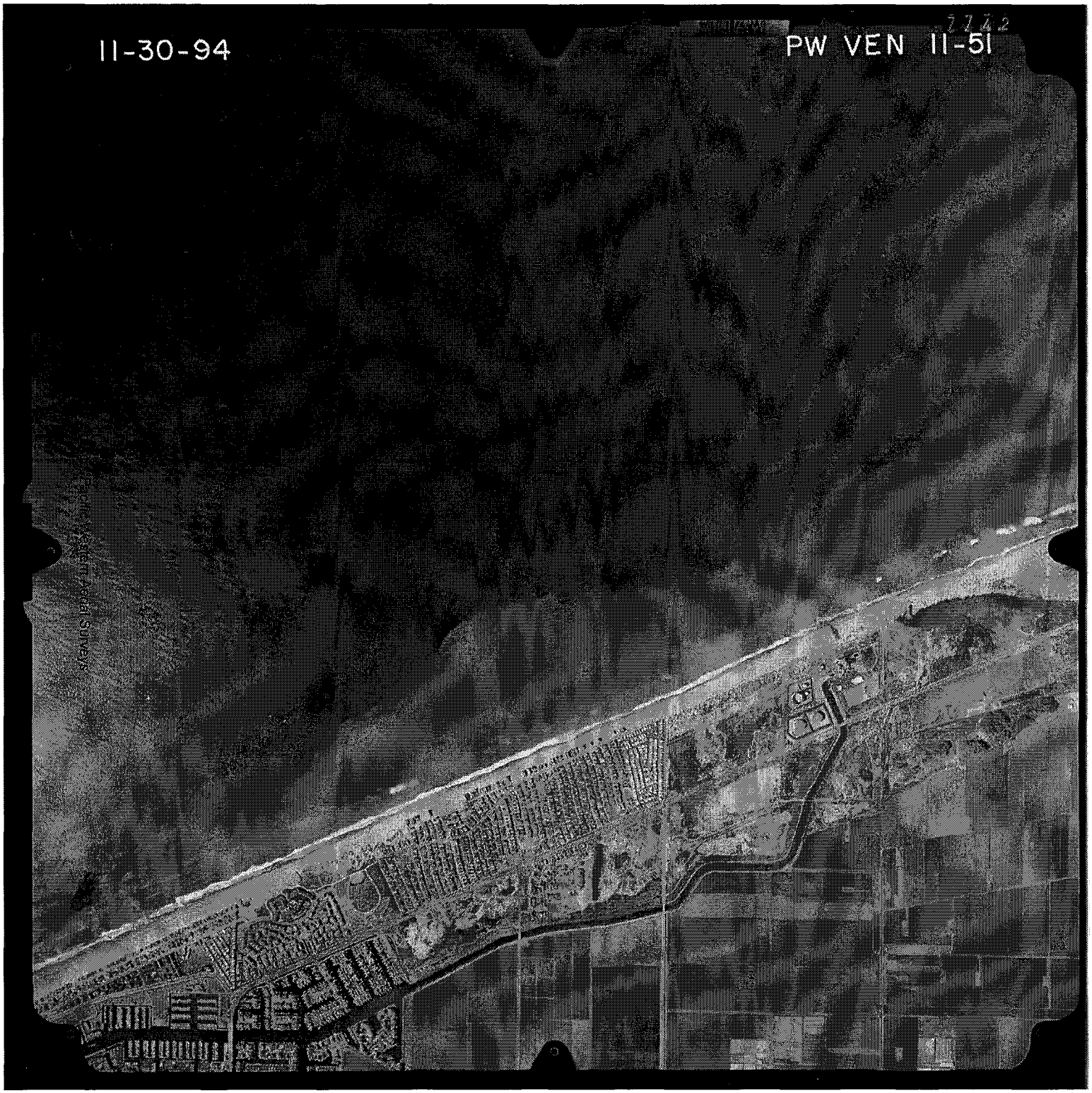
PW VEN 3-64
Pacific Western Aerial Surveys

PW Ven4-64
1-11-84
Source: Pacific Western Aerial Surveys


1-12-87
PW VEN 5-119
Source: Pacific Western Aerial Surveys


5-23-89
PW VEN 7-51
Aerial Photography Field Office
National Ocean Service, NOAA

2900
PW VEN 9-61
9-19-92
Source: Pacific Western Aerial Surveys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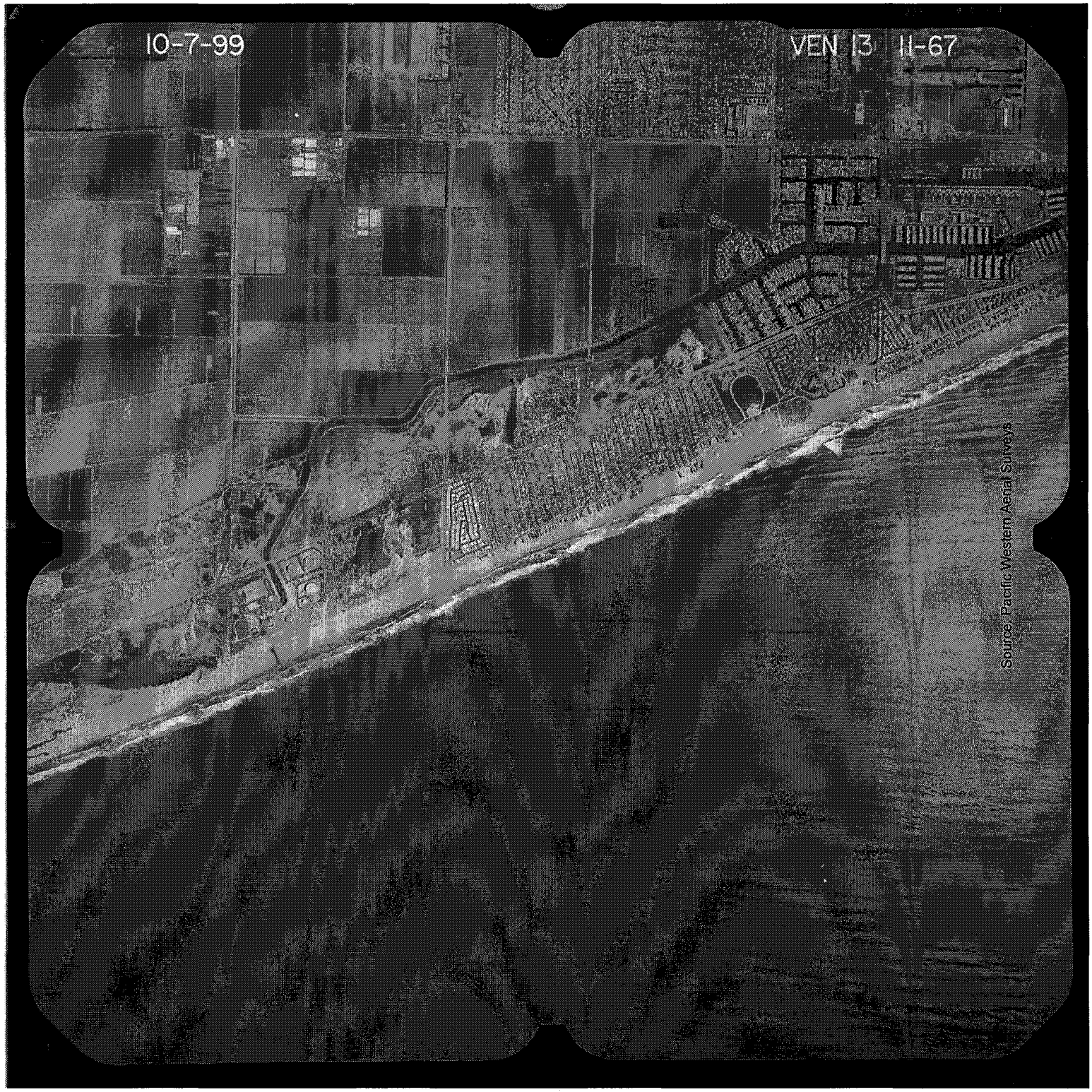
Pacific Western Aerial Surveys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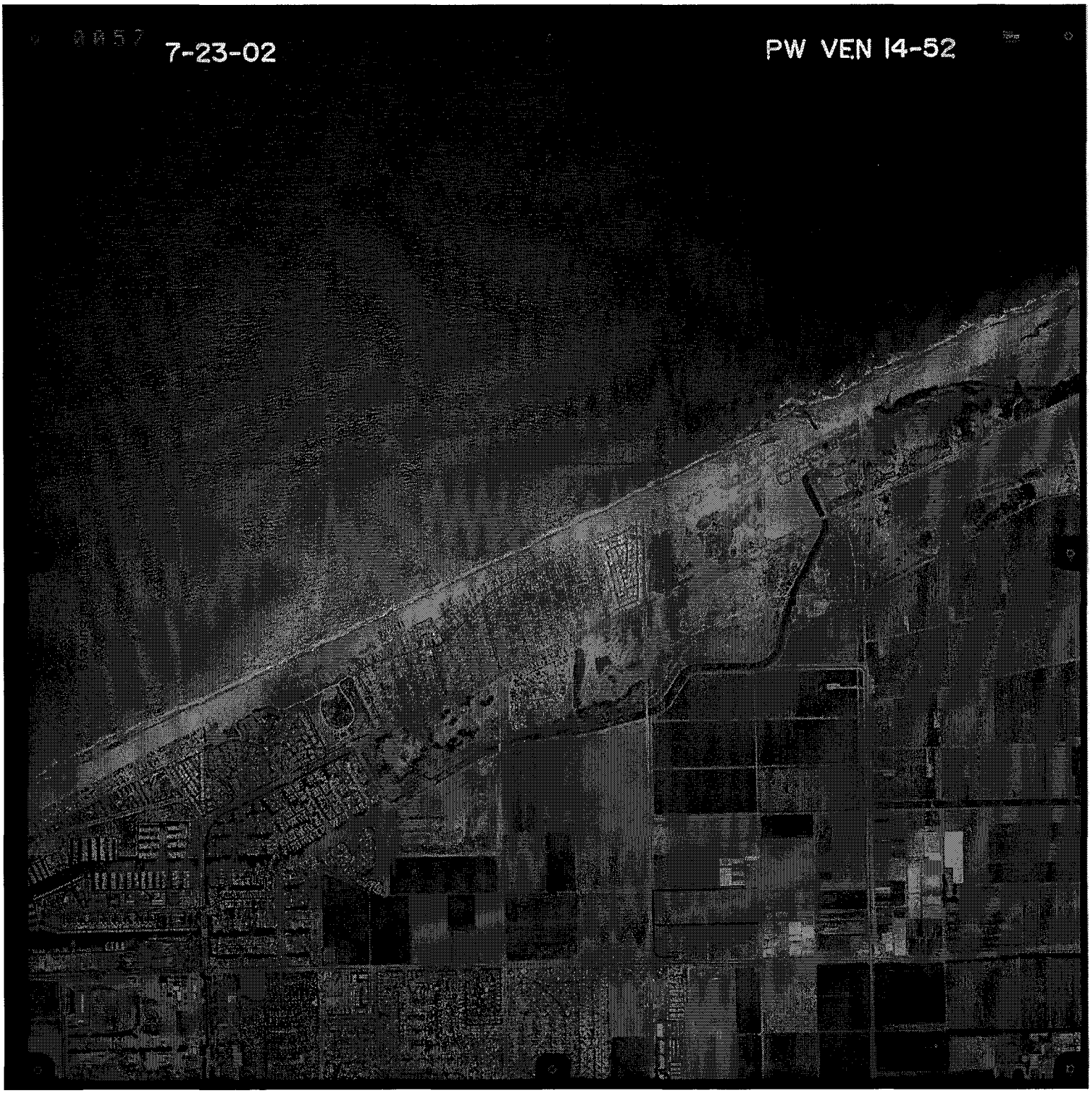
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7-23-02
PW VEN 14-52

APPENDIX 66-1
SAND MANAGEMENT SUMMARY

Response to Data Request - City of Oxnard

No. 66 -- Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

Start	Complete	Primary Contractor	Equipment Utilized in Maintenance of Outfall	Total Hours Sand Management	Estimated Volume Sand Moved (Cubic Yards)
01/29/2003	01/29/2003	CD Lyon	Bulldozer and Excavator	20.00*	1250
03/02/2004	03/09/2004	CD Lyon	Bulldozer and Excavator	20.00*	1250
04/20/2004	04/20/2004	CD Lyon	Bulldozer and Excavator	30.00*	1875
12/13/2004	12/22/2004	CD Lyon	Bulldozer & Excavator	90.00*	5625
02/22/2005	02/22/2005	CD Lyon	Bulldozer & Excavator	30.00*	1875
01/13/2007	1/14/2007	CD Lyon	Bulldozer & Excavator	15.75	984
07/27/2007	7/29/2007	CD Lyon	Bulldozer & Excavator	30.00*	1875
08/29/2007	9/8/2007	CD Lyon	Bulldozer & Excavator	20.00*	1250
01/18/2008	01/18/2008	CD Lyon	Caterpillar 325 Excavator	30.00*	1875
05/31/2008	6/2/2008	CD Lyon	Bulldozer & Excavator	15.00	938
02/28/2009	02/28/2009	CD Lyon	Caterpillar D6 Dozer & 325 Excavator	12.00	750
05/30/2009	05/31/2009	CD Lyon	Caterpillar D6 Dozer & 325 Excavator	15.00	938
12/8/2009	12/11/2009	CD Lyon	Caterpillar 325 Excavator, D5 & D6 Dozers	20.00	1250
12/14/2009	12/19/2009	CD Lyon	Caterpillar 325 Excavator & D6 Dozers	66.50	4156
02/3/2010	2/4/2010	CD Lyon	Caterpillar D6 Dozer, Excavator, and Backhoe	24.00	1500
05/24/2010	5/25/2010	CD Lyon	Caterpillar D6 Dozer & Excavator	18.00	1125
02/28/2011	3/3/2011	CD Lyon	Caterpillar D6 Dozer & 325 Excavator	26.00	1625

* Estimate of hours is based on invoice totals

Response to Data Request - City of Oxnard

No. 66 -- Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

Start	Complete	Primary Contractor	Equipment Utilized in Maintenance of Outfall	Total Hours Sand Management	Estimated Volume Sand Moved (Cubic Yards)
04/4/2011	04/4/2011	CD Lyon	Caterpillar 325 Excavator	4.00	250
06/28/2011	7/1/2011	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	16.00	1000
07/10/2011	07/10/2011	CD Lyon	Caterpillar D5 Dozer & 325 Excavator	20.00	1250
02/9/2012	2/9/2012	CD Lyon	Caterpillar D6H & 320 Excavator	9.00	563
04/12/2012	4/13/2012	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	35.00	2188
05/24/2012	5/25/2012	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	18.00	1125
06/6/2012	06/6/2012	CD Lyon	Caterpillar D6-H Dozer	4.00	250
06/11/2012	06/11/2012	CD Lyon	Caterpillar D6-H Dozer	5.00	313
06/21/2012	06/21/2012	CD Lyon	Caterpillar D6-H Dozer	7.00	438
06/25/2012	06/25/2012	CD Lyon	Caterpillar 320 Excavator	5.00	313
07/8/2012	07/8/2012	CD Lyon	Caterpillar D6H Dozer	6.00	375
07/17/2012	7/21/2012	CD Lyon	Caterpillar 320 Excavator (work occurring 7/17 & 7/21, respectively)	14.00	875
08/19/2012	08/19/2012	CD Lyon	Caterpillar 320 Excavator	6.00	375
12/11/2012	12/11/2012	CD Lyon	Dresser-TD20 Bulldozer	5.00	313
12/13/2012	12/13/2012	CD Lyon	Dresser-TD20 Bulldozer	5.00	313
01/10/2013	1/11/2013	CD Lyon	Caterpillar D5 Dozer & 325 Excavator	20.00	1250
02/11/2013	2/12/2013	CD Lyon	Caterpillarr D6H Dozer	10.00	625

* Estimate of hours is based on invoice totals

Response to Data Request - City of Oxnard

No. 66 -- Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

Start	Complete	Primary Contractor	Equipment Utilized in Maintenance of Outfall	Total Hours Sand Management	Estimated Volume Sand Moved (Cubic Yards)
03/13/2013	3/14/2013	CD Lyon	Caterpillar D6-H Dozer and 325 Excavator	18.00	1125
04/27/2013	04/27/2013	CD Lyon	Cat D6-H Dozer and 325 Excavator	12.00	750
05/18/2013	05/18/2013	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	12.00	750
06/13/2013	6/14/2013	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	26.00	1625
07/12/2013	07/12/2013	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	14.00	875
07/26/2013	07/26/2013	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	10.00	625
08/7/2013	08/7/2013	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	10.00	625
08/21/2013	8/22/2013	CD Lyon	Caterpillar D6H Dozer & 325 Excavator	22.00	1375
09/17/2013	09/17/2013	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	12.00	750
01/27/2014	01/27/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	12.00	750
03/4/2014	03/4/2014	CD Lyon	Caterpillar D6H Dozer	6.00	375
03/19/2014	03/19/2014	CD Lyon	Caterpillar D6H Dozer	6.00	375
04/12/2014	04/12/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	13.00	813
04/30/2014	04/30/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	13.00	813
05/28/2014	05/28/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	11.00	688
6/23/2014	6/23/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	11.00	688
07/19/2014	07/19/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	13.00	813

* Estimate of hours is based on invoice totals

Response to Data Request - City of Oxnard

No. 66 -- Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

Start	Complete	Primary Contractor	Equipment Utilized in Maintenance of Outfall	Total Hours Sand Management	Estimated Volume Sand Moved (Cubic Yards)
07/22/2014	7/23/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	17.00	1063
09/8/2014	09/8/2014	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	4.00	250
12/19/2014	12/19/2014	CD Lyon	Caterpillar D5 Dozer & 320 Excavator	13.00	813
01/4/2015	01/4/2015	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	14.00	875
02/16/2015	02/16/2015	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	11.00	688
03/27/2015	03/27/2015	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	13.00	813
05/13/2015	05/13/2015	CD Lyon	Caterpillar D6H Dozer & 320 Excavator	11.00	688
07/10/2015	07/10/2015	CD Lyon	Caterpillar D5 Dozer & 325 Excavator	3.00	188

* Estimate of hours is based on invoice totals

Response to Data Request - City of Oxnard

No. 66 -- Information pertaining to clearing of sand from perimeter fence line to maintain proper fence height.

Start	Complete	Primary Contractor	Equipment Utilized in Maintenance of Outfall	Total Hours Sand Management	Estimated Volume Sand Moved (Cubic Yards)
11/23/2004	11/23/2004	CD Lyon	Excavator	8.00	500
05/31/2009	05/31/2009	CD Lyon	Caterpillar D6 Dozer	5.00	313
02/09/2012	02/09/2012	CD Lyon	Caterpillar 320 Excavator	2.00	125

EXHIBIT 6

DOCKETED	
Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	206533
Document Title:	Applicant's Responses to City of Oxnard Data Requests Set 2, 30-Day Extension (59, 60, and 62)
Description:	N/A
Filer:	Paul Kihm
Organization:	Latham & Watkins LLP
Submitter Role:	Applicant Representative
Submission Date:	11/6/2015 3:51:42 PM
Docketed Date:	11/6/2015

Application for Certification
(15-AFC-01)

Puente Power Project (P3)
Oxnard, CA

Responses to City of Oxnard Data Requests Set 2 30-Day Extension (59, 60 and 62)

November 2015

Submitted to:
The California Energy Commission

Prepared by: AECOM

TABLE OF CONTENTS

RESPONSES TO CITY OF OXNARD DATA REQUESTS SET 2

30 DAY EXTENSION

TABLES

FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AFC	Application for Certification
Cal-EMA	California Emergency Management Agency
CGS	California Geological Survey
NAVD88	North American Vertical Datum of 1988
PTHA	probabilistic tsunami hazard analyses
SAFRR	Science Application for Risk Reduction

LIST OF TERMS USED IN THE DISCUSSION

Geomorphic Region: Naturally defined geologic region that has a distinct landscape or landform shaped by a particular process.

Submarine Landslide: Marine landslides that displace soil and rock masses and transport sediment from the continental shelf into the deep ocean.

Thrust Fault: A tectonically induced inclined fracture where the rupture displacement and plate movement is mostly vertical.

Fold: When one or more originally flat, level surfaces, such as sedimentary strata, are bent or curved. The basic cause is likely to be some aspect of plate tectonics under high stress.

Fold-and-Thrust system: Deformed sedimentary rock in which the layers are folded by thrust faults.

Blind Thrust Fault: A thrust fault that does not rupture all the way up to the surface, so there is no evidence of it on the ground. It is "buried" under the uppermost layers of rock in the crust.

Subduction Zone: Subduction is the tectonic process of the oceanic crust colliding with and descending beneath the continental crust.

Co-seismic: When earthquake waves arrive simultaneously at a location, or the adjoining fault slip occurs simultaneously.

Uplift: Vertical ground block or plate displacement.

Holocene: The last 11,700 years of the earth's history.

Technical Area: Environmental Hazards

BACKGROUND: TSUNAMI INUNDATION

The AFC's analysis for a tsunami is based on the 2009 Oxnard tsunami map, confirmed with LIDAR data. This analysis indicates a water level elevation of 10 to 15 feet. AFC Appendix N-2, p. 5. With 2 feet of sea level rise, this leaves 3 feet of freeboard on the lowest part of the 25- to 30-foot-high berms/levees. This is a very small safety margin, given the omissions from the analysis. The AFC's cumulative sea level rise analysis was based on an historic 2009 tsunami map that does not include recently reported information on the Ventura Fault and other Southern California offshore fault systems and worst case sea level rise estimates. Thus, it underestimates potential tsunami impacts. Further, the AFC's tsunami analysis fails to consider cumulative effects from other sources of flooding.

Awareness of the hazards of tsunami inundation has grown since the 2011 Japan earthquake and tsunami. This event led scientists to investigate similar fault systems in Southern California that could unleash tsunamis along the California coast. Recent geological work has indicated that the Ventura fault could cause a major earthquake that could create a tsunami that would begin "in the Santa Barbara Channel area, and would affect the coastline...down through the Santa Monica area and further south." Other work has reported active fault zones off the Southern California coast.[1] These fault systems were not considered in developing the "Tsunami Inundation Map for Emergency Planning, Oxnard Quadrangle," that the AFC relied on. AFC, Appendix N-2, Attachment 2, Inset Table 1. As a result of these studies, the California Geological Survey is studying whether it needs to revise tsunami hazard maps.[2] The resulting inundation would be "severe right along the coast."[3]

The Preliminary Geotechnical Evaluation (AFC, Appendix A, pdf 259/260) states the project site is adjacent to a mapped tsunami run-up hazard area and notes that while dunes elevated up to about 25 feet above MSL offer some protection, "due to the site location in an area mapped as susceptible to tsunami run-up hazards, the potential for tsunami run-up hazards at the site and possible mitigation techniques should be evaluated during the detailed design phase of the project." The Sea Level Rise Analysis in Appendix N-2, on the other hand, dismisses tsunami inundation as an issue because the elevation of a tsunami with sea level rise is less than the height of the berm. AFC, Appendix N-2, p. 6. This conclusion fails to consider the impact of storm surges, coastal erosion and sea level risk on the structural integrity of the dunes and berms.

DATA REQUEST

59. Please prepare a tsunami runup hazard analysis that includes the most recent information on the Ventura Fault and Southern California fault system and propose mitigation for any impacts. Your analysis should include an updated tsunami hazard map that includes all recently discovered faults.

[1] Mark R. Legg et al., High-Resolution Mapping of Two Large-Scale Transpressional Fault Zones in the California Continental Borderland: Santa Cruz-Catalina Ridge and Ferrelo Faults, Journal of Geophysical Research: Earth Surface, May 30, 2015; Sci-News.com, Researchers Map Active Fault Zones off Southern California, June 1, 2015, See: http://www.sci-news.com/other sciences/geophysics/science-fault-zones-southerncalifornia-02862.html.

[2] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-meventura-fault-20150420-story.html#page= 1.

[3] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-meventura-fault-20150420-story.html#page= 1.

RESPONSE

Introduction

The proposed project site is near the shoreline at the eastern end of the Santa Barbara Channel. It is within the northern extent of the Continental Borderland, an offshore geomorphic region extending from Point Conception in the north, to Vizcaini Peninsula in Baja California to the south. The inner Continental Borderland region is tectonically active and contains several faults that are potential seismic hazards to nearby cities (Astiz and Shearer, 2000). The Santa Barbara Channel offshore of the project site is characterized by pronounced bathymetric features bounded to the south by the Channel Islands (San Miguel to Anacapa), and is therefore relatively isolated from the rest of the Continental Borderlands. Therefore, local tsunami sources are limited to the fault systems in the near vicinity of Oxnard and Ventura.

The tsunami hazard stems from both local and distant sources. Local sources include:

- Goleta landslide complex: an area along the continental rise off Santa Barbara that shows evidence of repeated submarine landslides;
- Ventura-Pitas Point fold and thrust: a fold-and-thrust system that runs through Ventura and offshore under the Santa Barbara Channel; and
- Oak Ridge blind thrust: an offshore blind thrust structure.

Distant sources include:

- Alaska-Aleutian subduction zone: the source area for the 1964 Alaska earthquake (among others), which historically has had the strongest tsunami impact in central and southern California; and
- Other sources, such as the Chile subduction zone and the Kuril-Kamchatka system, which have had moderate impact in southern California.

Tsunami Inundation and Recurrence Intervals

Goleta Landslide Complex: Return periods for the local sources in particular are highly uncertain. For the Goleta complex, Lee et al. (2004) dated several slide events with 30,000- to 50,000-year intervals, the last one dated 5,500 years ago. Greene et al. (2006) modeled the tsunami effects of such a landslide, and found runups as high as 33 feet (10 meters) in the Goleta area—the area that would be most affected. Submarine landslides tend to have a very strong directional effect; this means that the largest tsunami occurs in the direction of the slide, with smaller tsunamis in other directions. Because Ventura and Oxnard are situated away from the direction of maximum wave heights, the expected effect of a Goleta submarine landslide at the project site would be much less. In fact, the California State tsunami inundation maps (Cal-EMA, 2009), which show the areas likely to be inundated due to tsunamis, are partly based on the Goleta landslide, and the inundation line does not reach the project site (see Application for Certification [AFC] Appendix N-2 for a copy of the inundation map). Therefore, the Goleta complex does not pose a significant tsunami hazard to the project.

Ventura-Pitas Point Complex: The Ventura-Pitas Point complex has recently received significant attention (Shaw et al., 2015) due to the studies by Hubbard et al. (2014) and Ryan et al. (2015). Shaw et al. (2015) postulated the occurrence of very large earthquakes along the Ventura-Pitas Point complex, based on 15 to 30 feet (5 to 10 meters) of co-seismic uplift of

marine terraces in the Ventura area. In a simple faulting environment, such uplift would need large amounts of slip on the fault, which would require a much larger earthquake magnitude (and thus fault length) than can be sustained on the Ventura–Pitas Point complex itself, and would therefore require co-seismic slip on an eastward or westward extension such as the San Cayetano and Red Mountain faults (simultaneous earthquakes on multiple faults). Ryan et al. (2015) presented a dynamic rupture model of an earthquake that is consistent with the uplift given in Hubbard et al. (2014), one that is much simplified compared to the published geologic models. Their results show significant inundation in the Ventura and Oxnard regions, with an amplitude of 8.2 feet (2.5 meters) at the project site (see Figure 59-1), based on an elevation model with 100 feet (30 meters) of horizontal resolution. The inundation map included in the Ryan study shows the project site in the inundation zone; however, because the predicted amplitude is below the top of the dunes and below the site elevation, it is unclear how the site would be inundated. The mapping shown in the Ryan study is therefore questionable with respect to the project site.

Nicholson et al. (2015) have argued that the large uplift of the marine terraces is only a local manifestation due to complexities in the fault geometry, and does not reflect the overall deformation on the Ventura-Pitas Point system, which they estimate to be significantly smaller. Furthermore, Sorlien and Nicholson (2015) argue that the source model used for the tsunami simulations of Ryan et al. (2015) is inconsistent with the observed crustal structure under the seafloor. Most notably, they find that there is no evidence that the fault rupture extends to the surface; this means that the Ryan et al. (2015) study overestimated the seafloor uplift, and therefore the size of the tsunami and extent of the inundation zone.

Thio et al. (2015) also modeled the earthquakes on the Ventura-Pitas Point complex using geologically consistent geometries, but with maximum uplift of about 16 feet (5 meters), which is at the low end of the Hubbard et al. (2014) numbers. Their results show no inundation at the project site for any of their scenarios, with wave amplitudes generally lower than the Ryan et al. (2015) results, which is to be expected given the higher uplift in the latter model.

Therefore, with the exception of Ryan et al, (2015), modeling of the Ventura-Pitas Point complex shows no inundation of the site. Furthermore, the mapping in the Ryan study does not appear to take into consideration the presence of the dune that fronts the project site. The maximum wave height predicted by the Ryan study is well below the height of the dune. Taking all of this into consideration, it does not appear that the Ventura-Pitas Point complex poses a significant tsunami hazard to the project site.

Oak Ridge Blind Thrust: This structure is under the Santa Barbara channel, several kilometers south of the Ventura-Pitas Point complex, and consists of a south-dipping blind-thrust fault. It is not clear whether this structure has been active in the Holocene, but its location poses a potential tsunami hazard for the Ventura-Oxnard region. Thio et al. (2015) modeled a single-scenario earthquake on this fault (Figure 59-1). The results showed that a tsunami generated by the Oak Ridge fault (for the modeled scenario) did not inundate the site, and therefore does not contribute significantly to the tsunami hazard at the site.

Science Application for Risk Reduction Scenario: In 2013, the U.S. Geological Survey carried out a multi-disciplinary study of the impact that a hypothetical large (Japanese Tohoku-like) tsunami scenario originating in Alaska would have on the coast of California (Ross et al., 2013). Generally, this scenario caused little inundation around the Santa Barbara Channel, and the biggest hazard came from the increased currents in ports and harbors. This scenario, which was thought to represent a 400- to 500-year event, would not result in inundation at the project site.

Probabilistic Results: Several probabilistic tsunami hazard analyses have included the project site area. Thio et al. (2010) carried out a probabilistic analysis of the tsunami hazard in California. This analysis was based on distant large earthquake sources around the Pacific Rim. The analysis produced inundation maps at about 100 feet (30 meters) horizontal resolution for return periods of 72, 475, 975, and 2,500 years. Even for the 2,500-year return period (2 percent probability of exceedance in 50 years or 1.2 percent probability in 30 years), the inundation does not reach the project site in these models. Figure 59-2 presents the hazard curve for this model for an offshore location close to the site (note graph has log-log axes). Figure 59-2 shows that the hazard is small for return periods less than 1,000 years (tsunami wave height of about 6 feet [or 2 meters]), and the hazard increases significantly above an annual return period of about 1,500 years.

Conclusion

Studies of distant earthquakes (teletsunamis) indicate that the site is unlikely to be in the inundation zone. Studies of tsunamis generated by local earthquakes indicate that the site is unlikely to be in an inundation zone for "frequent" events (events with return periods of 1,000 to 1,500 years or less). Studies that used conservative assumptions indicate that the site might be in an inundation zone for less frequent events, e.g., 2,500-year return period; however, the predicted water level is lower than the top of the dunes. The recent study by Ryan et al. (2015) showed the site possibly in the inundation zone, but appears to be very conservative by virtue of their simplified modeling environment (Ryan et al., 2015) in terms of fault geometry or model resolution. Ryan et al. also stress that their model is not sufficient for quantitative hazard estimates ("*Our simple model is not complete enough to provide a true quantitative measure of tsunami hazard or the precise spatial extent of the inundation zone in the Ventura and Oxnard region.*") Table 59-1 summarizes the results from the various studies presented above. The values shown in Table 59-1 assume that the tsunami occurs at mean high water. The tsunami is just as likely to occur at mean low water, in which case the tsunami would be about 3 to 4 feet lower. Because the return periods shown in the table are based on the likelihood of the source earthquake occurring (and not on the tide level), a tsunami occurring simultaneously at high tide would have a greater return period than shown in Table 59-1. In all cases, the maximum projected wave height is well below the top of the existing dunes that protect the project site.

Table 59-1
Maximum Tsunami Wave Amplitudes

Source	Shoreline		Tsunami Model Horizontal Grid Resolution (feet)	Annual Return Period (years)	Reference
	Maximum Wave Height (feet)[1]	Maximum Velocity (feet per second)			
Ventura-Pitas Point	19.4	NA	100	800 to 2,500	Ryan et al.
Ventura-Pitas Point	13.6	NA	33	800 to 2,500	Thio et al., 2015
Ventura-Pitas Point	14.8	NA	33	800 to 2,500	Thio et al., 2015
Oak Ridge	15.4	7.9	33	> 10,000	Thio et al., 2015
PTHA	NA	NA	100	2,500	Thio et al., 2010
SAFRR	12.1	3.8	100	500	Ross et al., 2013
Cal-EMA	14.6[2]	NA	NA	> 5,000	Cal-EMA, 2009

Notes:

[1] Heights are relative to NAVD88 at the shoreline for various seismic sources found in the literature. Tsunami results are expressed relative to mean high water; 4.6 feet were added to convert to NAVD88. Top of dune height ranges from 20 feet to 35 feet.

[2] CGS (2014) indicated a maximum runup of 10 feet in Oxnard; 14.6 feet is the elevation if the tsunami occurs at mean high water.

"NA" indicates that the data are not available.

Cal-EMA = California Emergency Management Agency
PTHA = probabilistic tsunami hazard analyses
NAVD88 = North American Vertical Datum of 1988
SAFRR = Science Application for Risk Reduction

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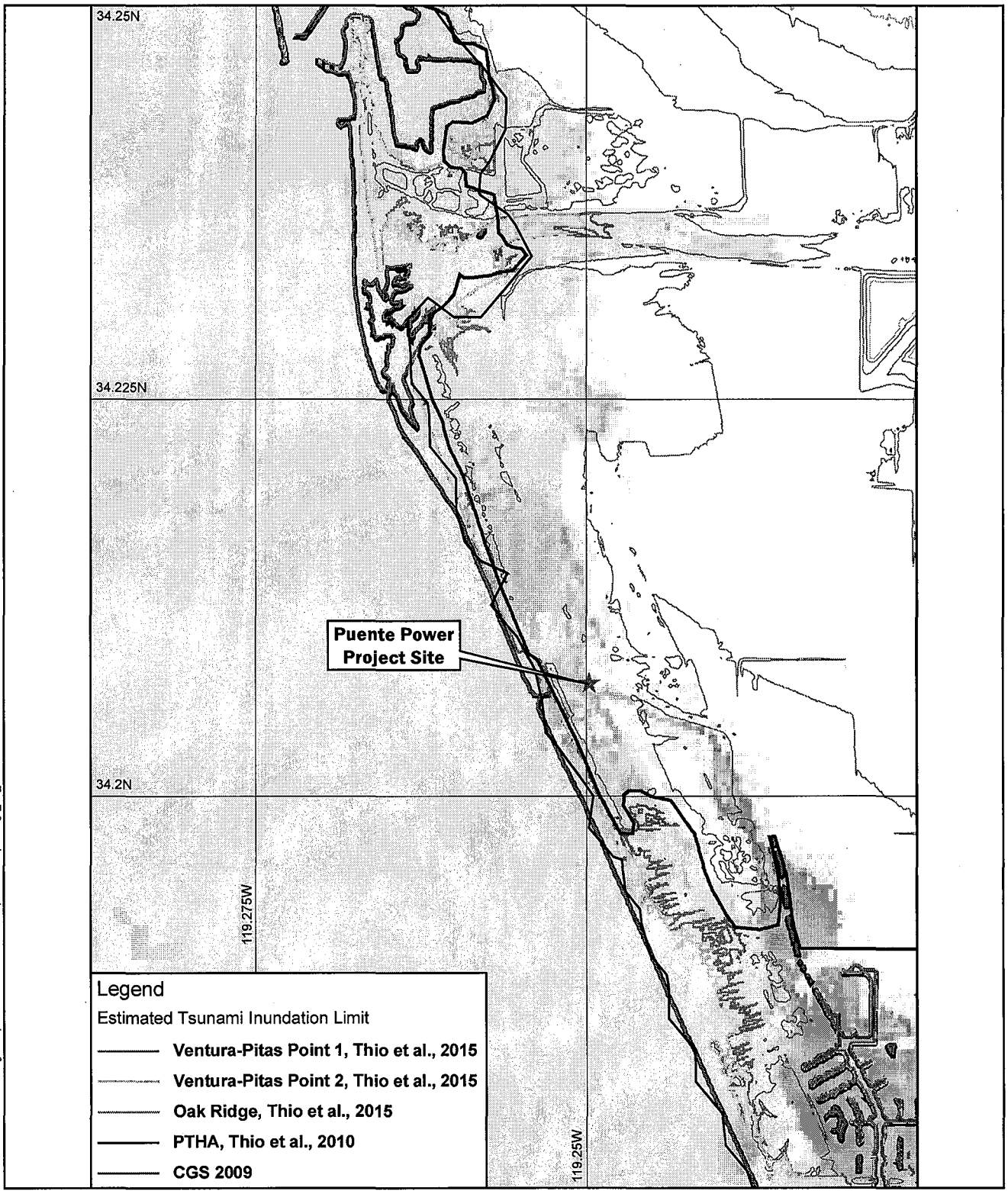

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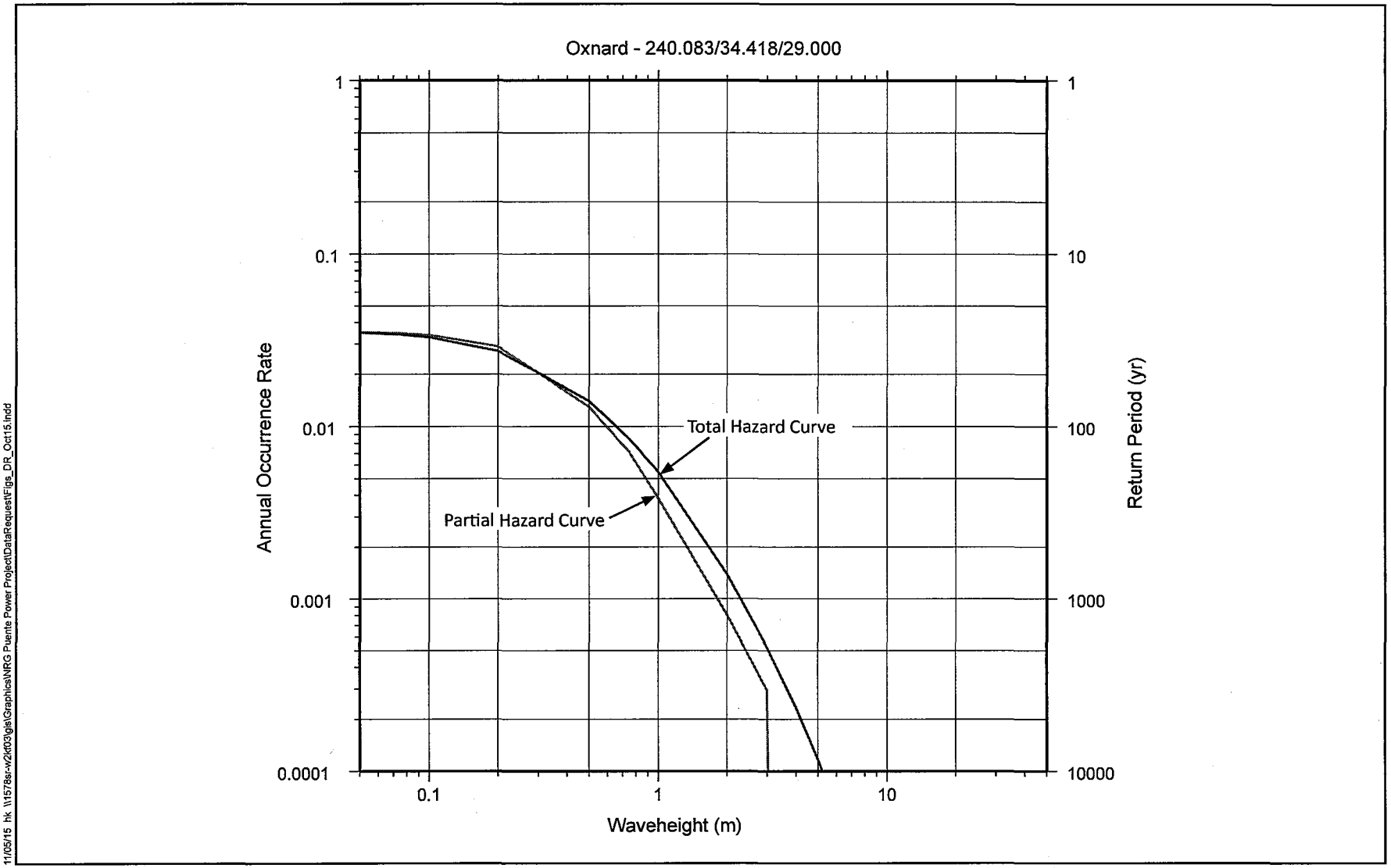
TSUNAMI MAP SCENARIOS

NRG
Puente Power Project
November 2015 Oxnard, California

FIGURE 59-1



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Source: Thio et al., (2010).

TSUNAMI HAZARD CURVES

NRG
Puente Power Project
November 2015 Oxnard, California

FIGURE 59-2

DATA REQUEST

60. Please revise the cumulative sea level rise analysis in Appendix N-2 to include recent information on the Ventura Fault and Southern California fault systems.[4]

RESPONSE

Table 47-2 provided information on the combined effects of various potential sources of flooding. In the response to Data Request 47, the water levels associated with tsunamis were not included and were to be determined. Based on information presented in the response to Data Request 59, Table 47-2 was updated to include the tsunami data. The results are provided in Table 60-1. For reference , note that the elevation of the project site is 14 feet North American Vertical Datum of 1988 (NAVD88). The height of the frontal dunes is between about 25 and 30 feet NAVD88.

Sea-level rise is unaffected by tsunamis. The effect of sea level on tsunami levels is assumed additive. The tsunami amplitudes shown in Table 60-1 do not include sea-level rise. For the year 2050, 2.1 feet should be added to the values in Table 60-1 to account for sea-level rise.

For 500-year or more frequent events, tsunamis likely do not contribute to the probability of flooding. For less frequent events, tsunamis can contribute to the combined level of flooding; because of the small likelihood of tsunamis occurring at the site, however, the probabilities are very low.

Table 60-1
Updated Cumulative Inundation Sources
at the P3 Site and Corresponding Annual Probabilities

		Input Values				Calculated Values	
Return Period (years)	Annual Probability of Exceedance	Tsunami Water Surface Elevation[1] (feet, NAVD88)	Extreme Tidal Elevation (feet)	Wind Wave Height (feet)	Wind Wave Period (second)	Wind Wave Run Up[2] (feet)	Maximum Potential Erosion from Storm Surge[3] (feet)
2	0.5	NA	7.28	6	18.25	7.6	24.3
5	0.20	NA	7.39	7.1	20.2	8.7	70.5
10	0.10	NA	7.44	7.8	21.3	9.4	95.2
25	0.04	NA	7.53	8.7	22.3	10.0	125
50	0.02	NA	7.60	9.4	23.0	10.5	145
75	0.013	NA	7.8	9.7	23.3	10.8	155
100	0.01	NA	7.81	10.1	23.5	11.0	163
200	0.005	NA	7.85	10.7	23.9	11.5	179
500	0.002	12.0[4]	8.0	11.6	24.4	12.1	204
1,000	0.001	13.5[5] – 19.3[6]	8.05	12.3	24.6	12.5	229
2,500	0.004	13.5 – 24.1[7]	8.1	13.2	24.9	12.8	248
10,000	0.0001	14.5[1] – 15.3[8]	8.5	14.5	25.2	13.1	304

Notes:
1 Assumes the tsunami occurs at mean high tide. From Cal-EMA (2014), assuming 4.5 feet between mean high water and NAVD88.
2 Excludes tsunami.
3 Maximum potential erosion for annual probabilities shown in table is based on the Komar (1999) method to calculate dune erosion. See response to Data Request 54.
4 SAFRR Tsunami Source, see Table 59-1. Value is for wave amplitude.
5 Ventura-Pitas Point Fault, Thio et al. (2015). See Table 59-1.
6 Ventura-Pitas Point Fault, Ryan al. (2015). See Table 59-1.
7 Low-end value from Ventura-Pitas Point Fault, Thio et al. (2015). See Table 59-1.
8 Oak Ridge Fault, Thio et al. 2015. See Table 59-1.

[4] J. Hubbard, J.H. Shaw and others, Structure and Seismic Hazard of the Ventura Avenue Anticline and Ventura Fault, California: Prospect for Large, Multisegment Ruptures in coastline.. .south." 1 "Quadrangle," 2 the Western Transverse Ranges, Bulletin of the Seismological Society of America, May 2014.

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DATA REQUEST

62 Please evaluate the ability of the existing berm to contain the force of a tsunami that raises water elevation to the top of the berm along the entire length of the berm.

RESPONSE

As discussed in previous responses to Data Requests, the beach dunes along the west and the dike along the north are not expected to be overtopped by a tsunami. Nevertheless, Applicant has done a preliminary calculation to evaluate the potential stability of the dunes and dike assuming that the water level is at the top of the dunes and/or dike.

To evaluate the ability of the existing berm (interpreted to be both the west frontal beach dunes and the north dike) to contain the force of a tsunami that raises the water elevation to the top of the berm, the estimated maximum tsunami inundation loads and scour conditions were evaluated.

Significant dune erosion can result from multiple tsunami wave cycles (typically three significant waves),from repetitive severe winter storms, or from a combination of both. Considering the ongoing monitored dune growth and the protective effect of significant vegetation or pavement cover for the unconsolidated Aeolian and angular sand deposits, a tsunami scour failure of the berms from runup to the crest is considered unlikely due to two effects:

- The broad sloping beach approaching the berms, which reduces initial energy and flow depth at the toe of the berms; and
- Relatively wide berm crests.

This protective buffer width also provides passive resistance to the tsunami hydrostatic and hydrodynamic loads. With these factors taken into account, the dunes are considered stable.

EXHIBIT 7

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Application of Southern California Edison Company (U338E) for Approval of the Results of Its 2013 Local Capacity Requirements Request for Offers for the Moorpark Sub-Area.	Application 14-11-016 (Filed November 26, 2014)

REPLY BRIEF OF NRG ENERGY CENTER OXNARD LLC AND NRG CALIFORNIA SOUTH LP

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August 5, 2015

TABLE OF CONTENTS

TABLE OF AUTHORITIES

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Southern California Edison Company (U338E) for Approval of the Results of Its 2013 Local Capacity Requirements Request for Offers for the Moorpark Sub-Area.	Application 14-11-016 (Filed November 26, 2014)

REPLY BRIEF OF NRG ENERGY CENTER OXNARD LLC AND NRG CALIFORNIA SOUTH LP

NRG Energy Center Oxnard LLC ("NECO") and NRG California South LP ("NRG South") (together, "NRG") submit their reply brief pursuant to Rule 13.11 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), and the schedule in the Assigned Commissioner's Scoping Memo and Ruling dated March 13, 2015. This reply brief responds to the opening briefs filed by the Office of Ratepayer Advocates ("ORA"), the City of Oxnard ("City"), Sierra Club, California Environmental Justice Alliance ("CEJA"), Center for Biological Diversity ("CBD") and World Business Academy ("WBA").

I. INTRODUCTION

ORA, Sierra Club and WBA oppose approval of the tolling agreement with NRG South for the existing 54 megawatt ("MW") Ellwood Generating Station ("Ellwood"), which will be refurbished (without any change in size or capacity) to achieve a remaining 30-year design life ("Ellwood Refurbishment Contract"). The Ellwood Refurbishment Contract was selected as a mutually inclusive offer with a tolling agreement for a new 0.5 MW energy storage facility to be built at the Ellwood site ("Ellwood Storage Contract"). As explained below, procurement of the bundled Ellwood Refurbishment Contract and Ellwood Storage Contract is consistent with the Commission's procurement rules and the procurement authority of Southern California Edison Company ("SCE"). Approval of these contracts adds energy storage (which will be incremental

capacity) at the Ellwood site, and lengthens Ellwood's useful life and enhances its operations, all as allowed under the Commission's procurement rules. Selection of the Ellwood Refurbishment Contract is also consistent with the Commission's prior decision approving an application by Pacific Gas and Electric Company ("PG&E") for approval of the results of its new generation request for offers ("RFO"), which procured contracts for new, incremental capacity and contracts for existing capacity that did not count toward PG&E's new generation procurement authorization.

The City, Sierra Club, CEJA, CBD and WBA oppose approval of the resource adequacy purchase agreement with NECO for the 262 MW simple cycle peaking facility known as the Puente Power Project ("Puente") (the "Puente Contract"). Puente will be built on a portion of the site of the existing Mandalay Generating Station ("Mandalay") in Oxnard, which is a plant that uses once-through cooling ("OTC") technology and is scheduled to retire. The City and Sierra Club rely on a modeling exercise prepared by the City's retained consultant, Dr. Revell, to assert that locating Puente at the Mandalay site will be "unreliable." As explained below, the modeling results have been discredited in the record and shown to be unreliable. The assertions of the City and Sierra Club do not support a finding regarding Puente's future reliability. The City also attempts to discredit the testimony of NECO's expert witness, Mr. Mineart, but the City's arguments misrepresent the record and are not credible.

The City also wrongly argues that procurement of the Puente Contract does not ensure reliability in the Moorpark sub-area because Puente is not in Goleta. The City fails to understand that Decision 13-02-015 authorized procurement for the Moorpark sub-area to address reliability issues arising largely due to the retirement of almost 2,000 MW of OTC capacity. All of this existing OTC capacity is located in Oxnard. The Puente Contract provides the opportunity to replace the almost 2,000 MW of aging OTC capacity with 262 MW of new fast-start peaking

capacity that repurposes and reuses existing gas and transmission infrastructure at the Mandalay site. This is an ideal local reliability solution.

The City and Sierra Club urge the Commission to delay approval of the Puente Contract until after the California Energy Commission ("CEC") renders its licensing decision for the Puente Application for Certification ("AFC"), but they have not shown how the CEC's decision would help "illuminate" issues, "assist" review, or allow the Commission to "better evaluate" the Puente Contract. The Puente Contract is final and has been executed by SCE and NECO. Delay serves no valid purpose. In the Puente Contract, NECO agreed to assume the risk of an unfavorable CEC licensing decision. The Commission should approve the Puente Contract without delay, and thereby allow NECO to undertake its obligation to obtain CEC approval for Puente in accordance with its contractual commitment. This result would be consistent with the Commission's prior decisions approving contracts for new generation.

The City wrongly asserts that Commission approval of the Puente Contract will prejudice the CEC's ability to consider a full range of alternatives and potential mitigation for Puente. This is not true. The City's relies entirely on the "Alternatives" section of the AFC for Puente, which was prepared by NECO's permitting team and submitted to the CEC. Regardless of what is written in the AFC, it is obvious that an applicant cannot dictate what the CEC will consider or require as part of its review of the Puente AFC. The City's argument is contrary to all reason and common sense. NECO's statements in the AFC are also consistent with CEQA, which does not require consideration of alternatives that cannot achieve a project's fundamental purpose.

The City further errs in asserting that Commission approval of the fixed price in the Puente Contract somehow limits the CEC's authority to require changes in the Puente project that might substantially increase its costs. This is wrong. The Puente Contract specifies a fixed resource adequacy payment with no mechanism for increasing that price during the contract term. Under the Puente Contract, NECO will be responsible for paying for and implementing

any mitigation required by the CEC. Commission approval of the Puente Contract does not, and could not, limit the CEC's authority to consider and require mitigation that is shown to be necessary to mitigate significant environmental impacts or ensure reliability.

The City also wrongly argues that the Commission must act as the lead agency under the California Environmental Quality Act ("CEQA") and conduct an environmental review of Puente. It is well established that Commission approval of a utility power purchase agreement is not a "project" for purposes of CEQA and does not trigger a requirement for environmental review under CEQA.

In a new twist on an old, wrong argument, the City alleges that the Commission must act as the lead agency under CEQA for Puente because approval of the Puente Contract would foreclose alternatives or mitigation measures that would ordinarily be part of CEQA review of Puente. This is also wrong. The City again distorts the statements in the Alternatives section of the Puente AFC. NECO does not have the power to dictate or constrain the CEC's authority to consider project alternatives or require mitigation. The City also misrepresents the testimony of NECO's witness, Ms. Gleiter, by alleging that Ms. Gleiter testified that Commission approval of the Puente Contract "makes it far more likely that the CEC will approve" the Puente AFC. In actuality, when Ms. Gleiter was asked to confirm this during cross-examination, she replied: "No, that is definitely not true."[1] Contrary to the City's arguments, Commission approval of the Puente Contract does not, and could not, commit the CEC to approve the Puente AFC or limit the scope of the CEC's environmental review of Puente.

The City also alleges that Puente provides more capacity than needed, but the City's position is contrary to the record. The CAISO's testimony shows that the selected contracts actually are only a portion of the resources needed to meet reliability needs in the Moorpark

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[1] Reporter's Transcript, Volume 2 (NRG/Gleiter), p. 340 lines 16-21.

sub-area. SCE's testimony also explains that the Puente Contract was necessary to meet the minimum procurement level of 215 MW that the Commission required in Decision 13-02-015.

CEJA argues that SCE's evaluation of offers in the RFO failed to comply with Commission decisions requiring consideration of environmental justice impacts, but its argument misinterprets the Commission's guidance on the use of qualitative considerations in an RFO. In directing utilities to consider certain qualitative bid evaluation metrics, the Commission did not specify that utilities must give disproportionate consideration to environmental justice factors over other qualitative considerations such as the preference for using brownfield sites rather than greenfield sites. The Commission also did not specify that qualitative considerations would override the utilities' quantitative analysis of which resources are the lowest cost and best fit for the utility's need. SCE has shown that the Puente Contact was the most cost-effective gas-fired offer, and it also satisfies the Commission's preference for locating new capacity at brownfield sites instead of greenfield sites. Siting Puente at the existing Mandalay site also provides environmental benefits because it provides the opportunity to replace almost 2,000 MW of aging OTC capacity with 262 MW of new fast-start peaking capacity. Construction of Puente thus would result in a net environmental benefit to the local community.

CEJA also incorrectly argues that SCE's selections of the Puente Contract and the Puente Refurbishment Contract were inappropriately based on a "qualitative" assessment regarding the risk of resource shortages due to the possible retirement of existing non-OTC units owned by NRG South. This claim is contrary to the record, which shows that SCE selected the winning contracts for the Moorpark sub-area based primarily on its quantitative analysis of net market value. Additional qualitative factors may have supported its selection, but the Puente Contract won due to its net market value. SCE's testimony also shows that the Ellwood Refurbishment Contract offered a low cost solution to improve reliability in the Goleta service area. The Independent Evaluator performed an independent, parallel evaluation of the offers and confirmed

that the contracts' economics and their general terms and conditions represented the best resources available from a competitive solicitation.

Sierra Club, the City and WBA unreasonably urge the Commission to reject the RFO results, and to require SCE to start over and conduct another RFO to procure a greater quantity of preferred resources. SCE explained that it selected every preferred resources offer for the Moorpark sub-area other than energy storage, and still had to select a large gas-fired generation offer to meet the minimum procurement authorization of 215 MW. Given that SCE has just completed an exhaustive RFO process, it is not reasonable to expect that the results of a second RFO would produce materially greater amounts of preferred resources. WBA's witness also confirmed that the resources advocated by WBA were not bid into the RFO and are "speculative numbers." It would not be prudent to risk local reliability based on speculation about alternative resources.

II. DISCUSSION

A. The Ellwood Refurbishment Contract Does Not Violate Commission Rules Or SCE's Procurement Authority.

ORA and Sierra Club oppose approval of the Ellwood Refurbishment Contract based on their view that SCE lacks authority to procure capacity from a refurbished existing plant in the LCR RFO.[2] Sierra Club argues that SCE violated procurement rules adopted on page 28 of Decision 14-02-040, but review of that decision shows that SCE's procurement of the bundled Ellwood Refurbishment Contract and Ellwood Storage Contract is consistent with the Commission's procurement rules. In Decision 14-02-040, the Commission stated:

> While current rules do not specifically prohibit the combination of RFOs for existing or new facilities, we hereby clarify that upgraded and repowered plants are allowed to bid in new generation RFOs. We clarify the rules so as to oversee the

[2] ORA Opening Brief, pp. 5-7; Sierra Club Opening Brief, pp. 5-7.

administration of RFOs that fill defined reliability needs in the most cost effective way.

Allowing for the incremental capacity of existing plants or repowered plants to participate in long-term RFOs appropriately acknowledges the varied technological capabilities and improvements possible with today's generation stock, and may alleviate some need to build additional capacity. **In addition, it may be possible for an existing power plant to add capabilities (e.g., energy storage, more optimal ramp rate, or start up times) that would enhance the operation of the plant and increase its value to the system.**

In discussing this issue, first we need to define the term "incremental capacity." We will take SCE's recommendation that the definition should be "capacity incremental to what was assumed in the underlying needs assessment." In other words, these are net additions. **We agree with SDG&E that an existing facility may provide value to IOU ratepayers if it has a useful life extending beyond its current contract or is able to lengthen its useful life by upgrading or repowering various facility components**. The following terms are defined herein:

- Upgraded plants: Upgrades are defined as expanding the generation capacity at, **or enhancing the operation of, a generation facility**, so long as such incremental MW and/or enhanced operating characteristics can provide the necessary attributes that the Commission has authorized the utility to procure. **An upgraded plant** or a plant with incremental capacity additions **would be a plant where the main generating equipment is retained and continues to operate**.

- Repowered plants: Repowers are defined as capital investments that extend the useful life of a generation facility, after the planned retirement date. A repowered facility is a facility where the main generating equipment (such as the turbine) is changed out for new equipment.[3]

Procurement of the bundled Ellwood Refurbishment Contract and Ellwood Storage Contract is consistent with these rules. First, as quoted above, the Commission recognized that the rules do not "prohibit the combination of RFOs for existing or new facilities." Sierra Club

[3] Decision 14-02-040, pp. 28-29 (emphasis added).

tries to read such a prohibition into the rules, but none actually exists. Second, the combination of the Ellwood Refurbishment Contract and the Ellwood Storage Contract adds energy storage, which will be incremental capacity and a "net addition" at the existing Ellwood site. This is specifically allowed under the rules cited above. Third, refurbishing the Ellwood plant will "lengthen its useful life" and "enhances the operation of" the existing Ellwood plant, and provides the necessary attributes that SCE is authorized to procure. This is specifically allowed under the definition of an upgraded plant.

Sierra Club also misses the point that when a plant is repowered or upgraded to add incremental capacity, the utility would be expected to contract for all of the plant's available capacity, not just the portion that is incremental. Thus, while only the incremental capacity or "net addition" counts toward the amount of capacity that the utility is authorized to procure from new generation, it is reasonable to expect the utility to contract for all of the available capacity in order to meet reliability needs and obtain the best value from the upgrade. Certainly it would make no sense to buy only incremental capacity without also taking advantage of the existing capacity that was assumed to continue operating in the underlying need determination. To continue operating, an expanded plant also would need to have an off-taker for all of the plant's capacity, not just the portion that is incremental.

The Commission has previously approved contracts with existing plants that were procured through a utility's long-term RFO for new generation. In Decision 10-07-045, the Commission approved three contracts procured by PG&E through its 2008 long-term RFO. Of the three approved contracts, only one was for a new generating facility. The other two approved contracts were (1) a tolling agreement for the existing 674 MW Contra Costa Generating Station, and (2) a power purchase agreement for the existing 129 MW Midway Sunset Project. The Commission approved both contracts as part of its approval of PG&E's RFO results, and neither

contract involved upgrades or incremental capacity.[4] This precedent supports approval of the Ellwood Refurbishment Contract in this proceeding. As stated above, in Decision 14-02-040 the Commission noted that current rules do not prohibit the combination of RFOs for existing or new facilities, and did not adopt such a prohibition.

This precedent also shows that ORA's arguments are unfounded. ORA argues that the Ellwood Refurbishment Contract exceeds SCE's procurement authority and "subverts" the long-term procurement process.[5] As explained above, the procurement rules do not prohibit SCE from entering into agreements that accomplish the dual purpose of adding incremental storage capacity at Ellwood and lengthening its useful life. The Commission also previously approved the results of PG&E's long-term RFO process, which included two contracts for existing generation. ORA also acknowledges that SCE could contract with Ellwood through "bilateral contracts."[6] If SCE had executed the Ellwood Refurbishment Contract through a bilateral negotiation, SCE would file an application to obtain Commission approval. ORA has not shown why a separate bilateral negotiation and application process for the Ellwood Refurbishment Contract would be preferable to considering it here. It was logical and prudent to procure the Ellwood Refurbishment Contract in the RFO for the Moorpark sub-area, and it is most efficient to consider the Ellwood Refurbishment Contract in this proceeding given its role in addressing unique reliability concerns in a portion of the Moorpark sub-area.

ORA also mistakenly suggests that the Ellwood Refurbishment Contract has a "premium capacity price" similar to new capacity.[7] This is not true. SCE has explained that the Ellwood Refurbishment Contract offers a low cost option for enhancing long-term reliability in the Goleta

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4 Decision 10-07-045, pp. 36-40.

5 ORA Opening Brief, pp. 6-9.

6 ORA Opening Brief, p. 8.

7 ORA Opening Brief, p. 8.

service area.[8] The Independent Evaluator also performed an independent, parallel evaluation of the offers and concluded that all of the selected contracts, which include the Ellwood Refurbishment Project, merit Commission approval "because the contracts' economics and their general terms and conditions represented the best resources available from a competitive solicitation."[9]

Finally, ORA's argument that the 54 MW Ellwood Refurbishment Contract must count toward the 215 to 290 MW of incremental procurement authorized in Decision 13-02-015 makes no sense.[10] The 54 MW is existing, not incremental, capacity and SCE has been very clear on that point. The CAISO's studies also assumed that Ellwood would continue operating. Treating Ellwood as incremental capacity would falsely inflate the amount of incremental capacity to be added to the system.

B. The City Has Not Shown That Puente Will Be "Unreliable."

The City relies solely on the modeling exercise presented by its retained consultant, Dr. Revell, to allege that locating Puente at the Mandalay site would be "unreliable."[11] NRG's opening brief explained that the predictions of Dr. Revell's model have been shown to be inaccurate and flawed as applied to the Puente site. The model predicted that an El Nino-type storm event such as the one that occurred in January 1983 would flood the entire Puente site under current conditions, but that prediction is contrary to what actually happened. The January 1983 El Nino storm and other large storm events have occurred in the past, and the resulting waves and storm surges have had no impact to the Puente site – there was no flooding

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8 Exhibit SCE-7 (Cushnie), p. 6 lines 15-17.

9 Exhibit SCE-2, Appendix D (Independent Evaluator Report), p. 39.

10 ORA Opening Brief, p. 6.

11 City of Oxnard Opening Brief, pp. 6-7 and Exhibit A. Sierra Club makes the same assertions, but relies solely on the reports provided by the City's consultants. Sierra Club Opening Brief, pp. 2-4.

and no impact to Mandalay's operations.[12] Since the 1983 event, the beach fronting the Puente site has accreted and is now wider than it was in 1983.[13] In addition, as can be seen in the historic photos included with Mr. Mineart's testimony, foredunes have formed and stabilized farther out towards the ocean.[14] Thus, under "current conditions," the Puente site is not more vulnerable to coastal hazards than it was in 1983, but is actually less vulnerable. Under current conditions, the Puente site is protected by a big sandy beach that is 300 feet wide, with dunes that are 20 to 30 feet high.[15] If the same event occurred today, the waves would break onto a wider beach and would need to erode the newly formed foredunes before impacting the main dunes protecting the Puente site. Given that no damage occurred in 1983, it is unlikely that any damage would occur under current conditions.

Under cross-examination, Dr. Revell admitted that he did not consider what actually happened (or did not happen) at Mandalay during the 1983 storm event that he modeled.[16] Dr. Revell also admitted that he did not validate his model to actual events at the Mandalay site (which would have shown him that the model's predictions are wrong), and he did not try to calibrate the model with data regarding historical events to improve its accuracy.[17] Dr. Revell also stated that he does not intend to re-evaluate the model's accuracy now that he has the benefit of knowing Mandalay's site experience.[18] Dr. Revell also admitted that he is aware that the

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12 Exhibit NRG-2 (Mineart), Appendix B, p. 2; Reporter's Transcript (NRG/Mineart), Vol. 2, p. 382 line 24 through p. 383 line 3.

13 Exhibit NRG-2 (Mineart), Appendix B, p. 5 and Attachment 1.

14 Exhibit NRG-2 (Mineart), Appendix B, Attachment 1.

15 Exhibit NRG-2 (Mineart), Appendix B, p. 4; Reporter's Transcript (NRG/Mineart), Vol. 2, p. 386 lines 22-24.

16 Reporter's Transcript, Vol. 3 (City of Oxnard/Revell), p. 515 lines 20-25 and p. 517 lines 17-21.

17 Reporter's Transcript, Vol. 3 (City of Oxnard/Revell), p. 527 line 12 through p. 528 line 1.

18 Reporter's Transcript, Vol. 3 (City of Oxnard/Revell), p. 616 lines 11-25 ("And so it's possible, but I'm not currently – you know, it's not currently in the works.").

beach has grown.[19] Despite these flaws in Dr. Revell's analysis, the City repeats its alarmist predictions and sticks to its story that Puente "faces significant coastal hazards."[20] As shown above, the City's assertions are not credible and do not support a finding regarding Puente's future reliability.

The City also misleadingly suggests that by 2060 sea level rise will overtake the coast and flood "the majority of the Puente site" "under the lowest sea level rise projections."[21] The City fails to note that this dire prediction also relies on Dr. Revell's modeling of an extreme storm event similar to the January 1983 storm, but occurring in 2060 in combination with projected sea level rise. As explained above, the model's inaccuracy in predicting impacts from a storm that actually occurred in 1983 with no impact to the Puente site shows that the model cannot be trusted to predict what could happen from a recurrence of the same storm in 2060. Dr. Revell's modeled results also assumed that coastal erosion would occur due to wave impacts and sea level rise, but this contradicts evidence showing that the beach has not eroded and instead has grown steadily.[22] As Mr. Mineart explained, the likelihood of damage to the Puente site due to wave run up and storm surge flooding during an extreme storm event in 2050 "is remote," because for this to occur the beach would need to erode most of the way back to the dunes, a distance of over 300 feet.[23] Thus, for the City's prediction to be accurate, not only would the beach need to stop growing, it also would need to shrink substantially – by over 300 feet – to

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19 Reporter's Transcript, Vol. 3 (City of Oxnard/Revell), p. 595 lines 17-21.

20 City of Oxnard Opening Brief, pp. 6-7 and Exhibit A.

21 City of Oxnard Opening Brief, p. 7.

22 Exhibit NRG-2 (Mineart), Appendix B, p. 5 (showing that the beach has widened by approximately 200 feet since 1947 and is currently approximately 300 feet wide); Reporter's Transcript, Volume 2 (NRG/Minear), p. 408 lines 22-25 ("You could see from the photos it has grown from '47 up to 2012 where our photos cover you can see that the beach has grown fairly regularly.").

23 Exhibit NRG-2 (Mineart), Appendix B, p.4.

reduce the level of protection historically provided by the beach. The City has not shown that this is probable.

The City also relies on Dr. Revell's theory, which has been discredited, that sediment supply to the beach fronting the Puente site is likely to decrease and leave the Puente site more exposed to coastal hazards and the impacts of sea level rise in the future.[24] Recognizing that Dr. Revell admitted that the beach has grown,[25] the City now warns that the beach "can't grow much wider," and insists that the "long-term trend for beach conditions indicates diminished sediment supply and more erosion."[26] Dr. Revell's statement that the beach "can't grow much wider" is unsupported – he made this assertion by looking at a photograph of the current beach without any explanation.[27] As explained above, the record shows that the beach in front of the Puente site has grown steadily over time. There is no evidence demonstrating that the beach "can't grow much wider." Dr. Revell's theory that sediment supply will diminish and lead to more erosion is also contrary to evidence showing that sediment supply is not likely to decrease significantly during Puente's operating life. Sediment yield from the Santa Clara River is a significant source of sediment for the beach fronting the Puente site, and is not predicted to decline significantly during Puente's useful life.[28] Dr. Revell's unsupported statements to the contrary are unreliable.

The City attempts to discredit the testimony of NECO's expert witness, Mr. Mineart, but the City's arguments misrepresent the record and are not credible. First, NECO did not present

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24 City of Oxnard Opening Brief, p. 7.

25 Reporter's Transcript, Volume 3 (City of Oxnard/Revell), p. 595 lines 17-21.

26 City of Oxnard Opening Brief, p. 7.

27 Reporter's Transcript, Volume 3 (City of Oxnard/Revell), p. 601 lines 4-27.

28 Reporter's Transcript, Volume 2 (NRG/Mineart), p. 409 line 17 through p. 410 line 10; Exhibit CO-4 ("Coastal Resilience Ventura: Technical Report of Coastal Hazards Mapping"), Figure 16 (fourth to last page of document) (showing substantial increases in sediment yield from the Santa Clara River, with decreases below historic levels not occurring until after almost 2050, the end of Puente's useful life).

expert testimony in order "to cast doubt" on long-term threats to Puente as the City alleges.[29] The City falsely suggests that NECO is trying to hide risks. In fact, NECO undertook an analysis of coastal hazards to inform its own investment decision. NECO made a contractual commitment to spend hundreds of millions of dollars to build a new plant at the Mandalay site, and bears the full risk under the Puente Contract if the plant cannot operate reliably due to coastal hazards.[30] The results of NECO's analysis show that coastal hazards do not prevent Puente from providing a reliable source of resource adequacy capacity.[31] NECO has millions of dollars on the line if its analysis is wrong. As the only party bearing that investment risk, NECO has zero incentive "to cast doubt" on threats to the plant.

Second, the City wrongly asserts that Mr. Mineart's analysis is "unreliable," and attacks his experience and credentials.[32] Mr. Mineart is a registered professional engineer with more than 30 years of experience in the fields of hydrologic, hydraulic and hydrodynamic analysis, erosion and sediment transport modeling, risks assessments, climate change and sea level rise, and surface and groundwater fate and transport modeling.[33] His resume describes his extensive experience assessing risks to infrastructure projects from wave impacts and flooding hazards, including due to projected sea level rise.[34] Compared to Dr. Revell's resume, Mr. Mineart has far greater experience conducting project-specific and site-specific risk assessments for infrastructure projects. Dr. Revell also admitted that he did not factor site-specific

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29 City of Oxnard Opening Brief, p. 7.

30 Exhibit NRG-1 (Gleiter), pp. 8-9.

31 Exhibit NRG-2 (Mineart), Appendix B, p. 6 ("The combined effects of [sea level rise ("SLR")], potential erosion of the berm, wave events, and storm surge run-up that could occur during the life of the project through planning horizon 2050 are not expected to adversely impact the project. The potential anticipated elevation of SLR, in combination with any of these natural phenomena or weather-induced events, would be well below the beach dunes in proximity to the west boundary of the project site.").

32 City of Oxnard Opening Brief, p.

33 Exhibit NRG-2 (Mineart), Appendix A.

34 Exhibit NRG-2 (Mineart), Appendix A.

considerations such as the operating experience at Mandalay into his analysis. Mr. Mineart's site-specific analysis is more appropriate to assess potential risks to Puente than the general Ventura County coastline analyses commissioned by the City.

Third, the City argues that Mr. Mineart's analysis was "improperly truncated," but Mr. Mineart correctly considered potential impacts during Puente's planned operating life, which is expected to last approximately 30 years between 2020 and 2050.[35] The City states that a 30-year useful life is contrary to the Coastal Commission's guidance recommending that sea level rise planning use a 100-year lifespan for critical infrastructure, including "power plants and energy transmission infrastructure."[36] The CEC disagrees with the Coastal Commission's blanket characterization of power plants as "critical infrastructure," and the resulting recommendation that all power plants "warrant special considerations such as applying a 500-year event design standard, assuming the highest sea-level rise projections, and protection from the worst-case future impacts."[37] The CEC explained that CEC staff analyzes information specific to each proposed project and site location, and expressed concern that "the public and intervening parties may believe that the Guidance recommends special considerations to all power plants without question."[38] The CEC therefore asked the Coastal Commission to remove "power plants" from the critical infrastructure category "to avoid a default assumption that all power plants are critical."[39] Applying these comments, the Coastal Commission modified the final recommended policy guidance so that "critical infrastructure" now only includes "**some** power plants and

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35 NRG-2 (Mineart), Appendix B, p. 3.

36 City of Oxnard Opening Brief, p. 8.

37 CEC Comments on Public Review Draft, California Coastal Commission Sea-Level Rise Policy Guidance, July 20, 2015, attached to this reply brief as Appendix A.

38 *Id.*

39 *Id.*

energy transmission infrastructure."[40] Given that the CEC has exclusive jurisdiction to evaluate the threat to Puente's reliability from coastal hazards and sea level rise, the CEC will decide the applicable considerations to apply to Puente in light of its useful life and site-specific conditions.

Fourth, the City falsely asserts that Mr. Mineart "simply assumed that beach accretion would keep up with sea level rise."[41] This misrepresents Mr. Mineart's analysis. Mr. Mineart's analysis assumed that beach accretion *would not* keep up with sea level rise. Despite the fact that accretion "has been occurring along the stretch of beach adjacent to the project site," Mr. Mineart applied a worst-case assumption that the beach would not keep up with sea level rise and would erode "about 130 feet from its current location by year 2060."[42] However, even applying this "worst-case scenario and assuming that historical accretion will not continue, the beach would be approximately the same width in 2050 as it was in 1947."[43] Thus, even if beach accretion does not keep up with sea level rise, the existing accreted beach is wide enough to accommodate the worst-case erosion scenario without jeopardizing the Puente site.

Fifth, the City faults Mr. Mineart for assuming 130 feet of *beach* erosion rather than 130 feet of *dune* erosion, citing the Coastal Resilience Ventura report, but the City has not shown how 130 feet of *dune* erosion in front of the Puente site is plausible given that the existing dunes are fronted by a 300-foot wide beach. Mr. Mineart explained during hearings that "they have such a huge protective beach right now," and "[t]he beach is 300-feet wide."[44] He also explained that "the beach is big enough that the dunes are not going to take a constant full force of wave

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40 California Coastal Commission Sea Level Rise Policy Guidance, Recommended Final Draft – July 31, 2015, p. 80 (insert to draft shown in bold underlined text), available at: http://documents.coastal.ca.gov/assets/slr/guidance/July2015_Full_RecFinal.pdf.

41 City of Oxnard Opening Brief, p. 9.

42 Exhibit NRG-2 (Mineart), Appendix B, p. 5.

43 Exhibit NRG-2 (Mineart), Appendix B, p. 5.

44 Reporter's Transcript, Volume 2 (NRG/Mineart), p. 386, lines 22-24.

action."[45] Mr. Mineart also explained that "we know the dunes have been stable," and "[t]here's no evidence of erosion," and "[t]here's no evidence that waves have ever impacted the dunes historically."[46] Mr. Mineart's site-specific analysis of the beach in front of the Puente site shows that the dune erosion predicted in the Coastal Resilience Ventura report is not accurate as applied to this particular site.

Sixth, the City incorrectly asserts that the 1984 aerial photograph attached to Mr. Mineart's testimony "shows significant erosion of the dune in front of the Mandalay site from just one large storm event from over 30 years ago."[47] Dr. Revell's "observation" from the 1984 photograph is contrary to Mr. Mineart's testimony as cited above, and also contradicts reports from the Mandalay plant staff, who confirmed that the 1983 storm event had no impact to the Mandalay site.[48] Significant dune erosion in front of the Mandalay site would have been reported by staff, and likely would have taken years to repair itself.

Dr. Revell's assertion that the 1984 photograph shows substantial erosion is not substantiated. Dr. Revell said that "vegetation has been substantially denuded or eroded in front of the site" in the 1984 photograph, but this is not evidence of dune erosion. The amount of visible vegetation varies in the aerial photographs. The most credible explanation for these differences is the relative resolution of the photographs. Scattered vegetation on the dunes cannot be seen as easily in the low resolution photographs as in the high resolution photographs. The 1984 photograph has a low resolution compared with, for example, the photograph from 1959, which more clearly shows vegetation and the road that used to be visible between the

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45 Reporter's Transcript, Volume 2 (NRG/Mineart), p. 387, lines 25-28.

46 Reporter's Transcript, Volume 2 (NRG/Mineart), p. 381, lines 17-21.

47 City of Oxnard Opening Brief, p. 10.

48 Exhibit NRG-2 (Mineart), Appendix B, p. 2 ("A review of large storm events that have caused damage at Oxnard Shores (1960, '63, '65, '71, '78, '83, '88, '95 and '97-98) indicated no impact to the project site with the exception of the need to repair rip-rap at the MGS outfall in 1983).

Puente site and the beach. As shown in the photographs from 1977, 1994, 2005, 2009, 2010 and 2012, that road has been covered with accumulated sand,[49] and the accumulated sand also could explain why vegetation is sometimes less visible in the photographs. Dr. Revell's willingness to testify to "significant erosion of the dune" based solely on the low resolution 1984 aerial photograph is not credible.

Finally, the City asserts that the Puente site is exposed to flooding from a tsunami triggered by an underwater landslide known as the "Goleta 2 Landslide," even under current conditions.[50] The City's analysis is based on modeling assumptions and mapping that assumed hydraulic connections between the tsunami wave and the Puente site.[51] The City's analysis for current conditions is contrary to the Tsunami Inundation Map for Emergency Planning developed by the California Emergency Management Agency, which shows that the Puente site is not currently in the tsunami inundation zone, including for a tsunami triggered by a Goleta 2 Landslide.[52] As Mr. Mineart testified, accretion of the beach in front of the Puente site so far has kept up with sea level rise.[53] Thus, the evidence does not suggest that the tsunami inundation map is wrong today. The City's claim to the contrary again casts doubt on the City's modeling prediction for future years.

In addition, NRG's opening brief explained that the Goleta 2 Landslide has an expected return rate of once every 15,000 years, which means it has a 0.2 percent chance of occurring during Puente's useful life.[54] Given this extremely low probability of occurrence, it is not

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49 Exhibit NRG-2 (Mineart), Appendix B, Attachment 2.

50 City of Oxnard Opening Brief, p. 11.

51 Exhibit CO-2 (Cannon), Attachment 2, pp. 5-6.

52 Exhibit NRG-2 (Mineart), Appendix B, Attachment 2; Exhibit NRG-4 ("Tsunami Inundation Map for Emergency Planning), Table 1: Tsunami sources modeled for Ventura County coastline (showing Goleta Landslide #1 and Goleta Landslide #2 in the list of Local Sources).

53 Reporter's Transcript, Volume 2 (NRG/Mineart), p. 376 line 28 through p. 377 line 4 (explaining that the beach "has been growing even though the sea has been rising").

54 NRG Opening Brief, p. 28.

reasonable to reject the Puente project based on a Goleta 2 Landslide. Even the City's witness Mr. Cannon acknowledged that "it's going to be up to the coastal engineer and the client that he's working for"[55] to decide how to plan for a Goleta 2 Landslide.

C. Contrary To The City's Arguments, Puente Is Ideally Located To Meet Local Reliability Needs In The Moorpark Sub-Area.

The City argues that procurement of the Puente Contract does not ensure reliability in the Moorpark sub-area because Puente is not in Goleta.[56] The City's argument is wrong. Puente is ideally located at the site of one of the existing OTC plants. The Commission previously found that replacing the OTC units with new generation at the same site would be "certain" to meet reliability needs. In Decision 13-02-015, the Commission found that: "Gas-fired resources at the current OTC sites are certain to meet the ISO's criteria for meeting LCR needs"; and "Other resources can also meet or reduce LCR needs, but may not be effective in doing so."[57] The Commission also found that "[t]he most likely locations for to meet LCR needs in the Moorpark sub-are are the sites of the current OTC plants."[58] The CAISO's testimony confirms that procurement of the Puente Contract meets local reliability needs and enhances the safe and reliable operation of SCE's electrical system.[59]

The City also misconstrues the reliability issue identified for the Goleta service area. Reliability in Goleta was not the only driver for LCR procurement for the Moorpark sub-area. As confirmed in Decision 13-02-015, the Commission authorized procurement for the Moorpark sub-area to address reliability issues arising largely due to the assumed retirement of almost 2,000 MW of OTC capacity. All of the relevant OTC capacity is currently located in Oxnard, at

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55 Reporter's Transcript, Volume 3 (City of Oxnard/Cannon), p. 634 lines 10-17.

56 City of Oxnard Opening Brief, p. 13.

57 Decision 13-02-015, Finding of Fact 26.

58 *Id.*, Finding of Fact 39.

59 Exhibit CAISO-1 (Sparks), p. 4 lines 8-13; Exhibit CAISO-3 (Millar), pp. 4-5.

Mandalay and the Ormond Beach Generating Station. The Puente Contract offers an opportunity to replace almost 2,000 MW of aging OTC capacity with 262 MW of new fast-start peaking capacity that repurposes and reuses existing gas and transmission infrastructure. This is an ideal local reliability solution for the Moorpark sub-area.

D. Parties Have Not Shown That CEC Approval Is Necessary For The Commission's Evaluation Of The Puente Contract.

The City and Sierra Club argue that the Commission should delay approval of the Puente Contract until after the CEC approves the Puente AFC, based on assertions that CEC approval somehow would "illuminate" issues, "assist" review, and allow the Commission to "better evaluate" the Puente Contract.[60] These vague arguments do not explain how delay would help the Commission evaluate the reasonableness of the Puente Contract. The Puente Contract is final and has been executed by SCE and NECO. Delay would not change the terms of the Puente Contract. In reality, the only result of delay would be to delay the full effectiveness of the Puente Contract, and miss the deadline for Commission approval that is specified therein. This would expose NECO to the risk of termination, which likely is what the City and Sierra Club are attempting to achieve with their push for delay.

Even if the termination trigger in the Puente Contract were extended until after the CEC process is complete, delay still serves no valid purpose. As one scenario, assume the CEC approves construction of Puente as proposed in the AFC. If this occurs, there would be nothing further for the Commission to consider, and no reason for additional review of the Puente Contract. There would be no valid basis for revisiting the CEC's approval of construction at the Puente site, given the CEC's exclusive authority to make that decision.

As a second scenario, assume the CEC rejects the Puente AFC. If the Commission approves the Puente Contract now to make it fully effective, then the CEC's rejection of the AFC

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[60] City of Oxnard Opening Brief, pp. 13-14; Sierra Club Opening Brief, p. 5.

would result in termination of the Puente Contract and NECO would owe a termination payment to SCE equal to its development security.[61] If Commission approval were delayed, however, NECO would not owe a termination payment because the Puente Contract would not have become fully effective when CEC rejection occurs.[62] This shows that delay in Commission approval actually would be to ratepayers' detriment, because it would delay achievement of the condition that causes the Puente Contract to become fully effective and binding on the parties. In either case, however, if the CEC rejects the AFC, there would be nothing further for the Commission to consider, and no reason for additional review of the Puente Contract.

As a third scenario, assume the CEC approves construction of Puente but requires additional mitigation not proposed in the AFC, such as potential requirements for monitoring the dunes. Under the Puente Contract, NECO bears all responsibility and costs associated with constructing, operating and maintaining Puente to supply resource adequacy capacity in accordance with the Puente Contract. NECO therefore will be responsible for paying for and implementing any mitigation required by the CEC. The City is very confused in this regard, because it seems to believe that the fixed price in the Puente Contract somehow limits the CEC's authority.[63] This is not correct. The Puente Contract specifies a fixed resource adequacy payment with no mechanism for increasing that price during the contract term. In the third scenario, NECO would pay for any increased costs associated with required mitigation and ratepayers would be insulated from those additional costs. Thus, in the third scenario, there would be nothing further for the Commission to consider, and no reason for additional review of the Puente Contract.

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61 Exhibit NRG-1 (Gleiter), p. 8 lines 14-19.

62 Exhibit NRG-1 (Gleiter), p. 8 lines 5-10.

63 City of Oxnard Opening Brief, pp. 16-17.

As a fourth scenario, assume the CEC approves construction of Puente, but finds that another site is environmentally superior. Parties who oppose Puente make much of this possibility, but consideration of the factors supporting reuse of a brownfield site and an existing power plant site with gas and transmission infrastructure already in place shows that this is not a likely outcome of the alternatives analysis. The CEC has explained the purpose of its alternatives analysis as follows:

> The California Environmental Quality Act (CEQA) Guidelines and the Energy Commission's regulations require an evaluation of the comparative merits of a range of feasible site and facility alternatives that achieve the basic objectives of the proposed project but would avoid or substantially lessen potentially significant environmental impacts. (Cal. Code Regs., tit. 14, §§ 15126.6(c) and (e); see also, tit. 20, § 1765.)
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> The range of alternatives, including the "No Project" alternative, is governed by the "rule of reason" and need not include those alternatives whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. (Cal. Code Regs., tit. 14, § 15126.6(f).) Rather, the analysis is necessarily limited to alternatives that the "lead agency determines could feasibly attain most of the basic objectives of the project." (Id.)[64]

Under these tests, the CEC considers the "comparative merits" of a reasonable range of feasible alternative sites and technologies that would achieve the basic objectives of the project, but would "avoid or substantially less potentially significant environmental impacts." Puente avoids many impacts that would occur if the plant were built at a greenfield site or a site that lacks existing gas and electric transmission infrastructure. The CEC will conduct the required alternatives analysis, but it seems unlikely that other sites would be environmentally preferable given that the Puente site has been used continuously for power generation since the 1950s.

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[64] California Energy Commission Final Decision on the Carlsbad Energy Center Project, June 2012, CEC-800-2011-004-CMF, p. 3-1.

Nevertheless, even if the CEC were to find that the Puente site cannot be approved due to the existence of feasible environmentally superior alternative sites that would avoid or substantially lessen potentially significant environmental impacts and also achieve the project's objectives, this outcome would not necessarily lead to further consideration of the Puente Contact in the form presented in this proceeding. If NECO does not have the ability to acquire and use the alternative site, then the fourth scenario would lead to termination of the Puente Contract just like a CEC decision rejecting the AFC. On the other hand, if NECO could obtain site control, it would be necessary to make changes to existing transmission interconnection arrangements for Puente and the Puente Contract in order to move Puente to the other site. In that situation, additional Commission review of the Puente Contract in its current form would not be relevant, and a modified contract would be submitted for review if agreed to by the parties. Thus, even under the improbable scenario in which an alternative site were shown to be environmentally superior to the Puente site, there would be no reason for additional review of the executed Puente Contract.

NECO urges the Commission to see through the rhetoric of parties who pretend to want additional "illumination" from the CEC process. In the Puente Contract, NECO agreed to assume the risk of an unfavorable CEC licensing decision. The Commission should approve the Puente Contract without delay, and allow NECO to undertake its obligation to obtain CEC approval for Puente in accordance with its contractual commitment. This outcome would be consistent with the Commission's prior decisions approving contracts for new generation.

E. Approval Of the Puente Contract Will Not Impair The CEC's Environmental Review Or Constrain The CEC's Authority To Evaluate Alternatives.

The City argues that Commission approval of the Puente Contract will "prejudice the CEC's ability to consider a full range of alternatives and potential mitigation for the Puente

Project."[65] This is not true. The City's relies entirely on the "Alternatives" section of the AFC for Puente, which was prepared by NECO's permitting team and submitted to the CEC. Regardless of what is written in the AFC, it is obvious that an applicant does not have the ability to dictate what the CEC can and cannot consider or require as part of its review of the Puente AFC. The City's argument is contrary to all reason and common sense.

The City also misrepresents NECO's statements in the Puente AFC. The language quoted by the City reflects NECO's position regarding the relative importance of the stated project objectives for Puente. The Alternatives section of the AFC describes a range of reasonable alternatives to Puente as proposed, including: the "No Project" alternative required by CEQA; alternative generation technologies and configurations; alternative sources of water supply; alternative waste handling systems; and alternative emission control technologies.[66] The Alternatives section lists the project objectives, which include the objective to fulfill NECO's obligations under the Puente Contract, along with seven other project objectives.[67] The Alternatives section then recites the applicable CEQA requirements for considering a reasonable range of alternatives, noting that "there is no ironclad rule governing the nature or scope of alternatives to be discussed other than the rule of reason."[68] In the next paragraph, which is the one the City cites, NECO presents its view that the project objective of meeting NECO's obligations under the Puente Contract is particularly important. That paragraph explains that the objective of meeting NECO's contractual commitment to build Puente with the technology and at the location specified in the Puente Contract "must be kept in mind when determining what

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65 City of Oxnard Opening Brief, p. 15. CEJA makes a similar argument. CEJA Opening Brief, pp. 22-25.

66 Exhibit CO-3, p. 5-1.

67 Exhibit CO-3, p. 5-1.

68 Exhibit CO-3, p. 5-2.

constitutes a range of reasonable alternatives, as well as which alternatives might be considered feasible."[69]

NECO's statements in the Puente Alternatives discussion are entirely consistent with CEQA's requirements for consideration of alternatives. Under CEQA, alternatives must be able to attain most of the basic objectives of the project.[70] CEQA does not require consideration of alternatives that "cannot achieve the project's underlying fundamental purpose."[71] An agency therefore may structure its alternatives analysis based on a reasonable definition of the project's underlying purpose, and need not study alternatives that cannot achieve that fundamental goal.[72] There is no rule requiring a CEQA analysis to explore offsite project alternatives in every case.[73] An agency may determine that no feasible locations exist either because basic project objectives cannot be achieved at another site, or because there are no sites meeting the criteria for feasible alternative site.[74] NECO's position is also consistent with California Public Resources Code Section 25540.6(b), which specifies that an evaluation of alternative sites is not required when a natural gas-fired thermal power plant is proposed for development at an existing industrial site such as Mandalay.

Ultimately, CEC Staff and the CEC AFC Committee for Puente will determine what constitutes a range of reasonable alternatives, and which alternatives should be considered in light of the project objectives. It is a legal certainty that NECO does not have the power to dictate or limit the scope of that review. The City's arguments to the contrary are without merit.

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69 Exhibit CO-3, p. 5-2.

70 Title 14, California Code of Regulations, Section 15126.6(a).

71 *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings,* 43 Cal.4th 1143, 1165 (2008).

72 *Id.*, p. 1166.

73 *California Native Plant Society v. City of Santa Cruz,* 177 Cal. App. 4th 957, 991 (2009).

74 *See City of Long Beach v. Los Angeles Unified School District,* 176 Cal. App. 4th 889, 921 (2009).

The City further errs in asserting that Commission approval of the fixed price in the Puente Contract somehow limits the CEC's authority "to require changes in the Puente project that might substantially increase its costs."[75] This assertion is wrong. As explained above, NECO will be responsible for paying for and implementing any mitigation required by the CEC. Commission approval of the Puente Contract does not, and could not, limit the CEC's authority to consider and require mitigation that is shown to be necessary to mitigate significant environmental impacts or ensure reliability.

F. The City's Argument That The Commission Must Conduct A CEQA Review Of Puente Misrepresents NECO's Testimony And CEQA.

The City argues that the Commission must act as the lead agency under CEQA and conduct an environmental review of Puente.[76] CBD also argues that CEQA requires environmental review in this proceeding,[77] and CEJA argues that the Commission is a "responsible agency" and must wait for the CEQA lead agency to complete its environmental review before approving the Puente Contract.[78] This is wrong. It is well established that Commission approval of a utility power purchase agreement is not a "project" for purposes of CEQA and does not trigger a requirement for environmental review under CEQA. In its recent decision approving a power purchase agreement executed by San Diego Gas and Electric Company for a new gas-fired power plant, the Commission rejected CBD's argument that CEQA review was required, and explained:

> To the contrary, CEQA Guidelines, long-standing case law, and Commission precedent all make clear that Commission review of purchase power contracts does not trigger CEQA. A contract for purchase power by a regulated entity is not a "project" pursuant to CEQA. CEQA defines a "project" as "[a]ctivities involving the

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75 City of Oxnard Opening Brief, pp. 16-17.

76 City of Oxnard Opening Brief, p. 17.

77 CBD Opening Brief, pp. 16-17.

78 CEJA Opening Brief, p. 22.

> issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies." (Public Resources Code § 21065.) Commission approval of a purchase power contract does not confer a lease, permit, license, certificate, or any other entitlement on the seller. Rather, it is an assurance that the utility will recover through its rates the costs that it incurs under the contract. It is well-settled that "[s]uch a ratemaking order is not 'project' under CEQA. All Commission orders concluding that CEQA does not apply to a ratemaking proceeding have been upheld. (E.g., Samuel C. Palmer, III v. Public Utilities Commission SF# 23980, writ denied 5/10/79.)" (D.86-10-044 at 16-17, 1986 Cal. PUC LEXIS 642, 16-17 (Cal. PUC 1986).)
>
> Likewise, the Commission is not a "responsible agency" under CEQA when it approves purchase power contracts. A "responsible agency" is defined as a public agency other than the lead agency which has discretionary approval power over the project. (Public Resources Code § 21069.) While the Commission has considerable discretion over whether to approve a purchase power contract, it does not have power to approve or deny the underlying generation project. The project underlying the purchase power contract could proceed regardless of the Commission's decision. (Id. at 16-18.)[79]

In a new twist on an old, wrong argument, the City alleges that the Commission must act as the lead agency under CEQA for Puente because approval of the Puente Contract would foreclose alternatives or mitigation measures that would ordinarily be part of CEQA review of Puente.[80] This is not true. As explained above, the City distorts the statements in the Alternatives section of the Puente AFC. NECO does not have the power to dictate or constrain the CEC's authority to consider project alternatives or require mitigation.

The City also asserts that NECO's witness, Ms. Gleiter, testified that "contract approval will provide significant financial momentum to the Puente project," and "makes it far more likely that the CEC will approve its project."[81] The City misrepresents Ms. Gleiter's testimony. When asked to confirm that "NRG has determined that PUC approval here makes it more likely

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79 Decision 15-05-051, pp. 29-30 (footnotes omitted).

80 City of Oxnard Opening Brief, pp. 17-18.

81 City of Oxnard Opening Brief, p. 18.

that it will receive approval of this project from the CEC", Ms. Gleiter responded: "No, that is definitely not true."[82]

Instead, Ms. Gleiter testified that Commission approval of the Puente Contract allows NECO to "scale expenses at risk."[83] As has been made clear in this proceeding, NECO is assuming substantial risk by agreeing to permit and build Puente to supply resource adequacy capacity pursuant to the Puente Contract. Numerous milestones in the project development process must be achieved successfully in order for NECO to meet this contractual commitment. Commission approval of the Puente Contract is one significant milestone because, as Ms. Gleiter explained, the Puente Contract provides the revenue stream that supports the investment. CEC approval of the Puente AFC is another obvious key milestone. Mr. Gleiter's testimony explained how a project developer views these milestones together. As long as both milestones remain unmet, the total risk of success or failure is heightened, making the significant project development and permitting expenditures more "at risk." Meeting one key milestone such as approval of the Puente Contract makes a developer more comfortable about continuing to spend millions of dollars to meet the next key milestone of obtaining CEC approval. There are other milestones in this risk assessment, including project financing and construction hurdles. But the risk assessment described by Ms. Gleiter is a purely internal risk assessment by NECO and its parent company. NECO's assessment of its own financial risk does not, and indeed could not, limit the CEC's authority to decide whether or not to approve the Puente AFC, or constrain the CEC's independent review of the Puente AFC. The City's argument to the contrary is wrong.

In addition, the CEQA case law cited by the City does not apply here. In *Save Tara v. City of West Hollywood,* the Court addressed "the question of whether and under what circumstances an agency's agreement allowing private development, conditioned on future

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82 Reporter's Transcript, Volume 2 (NRG/Gleiter), p. 340 lines 16-21.

83 Exhibit NRG-1 (Gleiter), p. 7 lines 23-25.

compliance with CEQA, constitutes approval of the project within the meaning of sections 21100 and 21151" of CEQA.[84] That case involved an agreement entered into by the City of West Hollywood conveying to a developer an option to purchase certain city-owned real estate for use to construct a housing development, with an additional commitment by the city (not conditioned on CEQA compliance) to contribute toward development costs. The city's obligation to convey the property was conditioned on all applicable requirements of CEQA having been satisfied. The petitioners sought a decision holding that the city was required to prepare an environmental impact report for the housing development project *before* it agreed to convey the property to the developer. The Court held that: "A CEQA compliance condition can be a legitimate ingredient in a preliminary public-private agreement for exploration of a proposed project, but if the agreement, viewed in light of all the surrounding circumstances, commits the public agency as a practical matter to the project, the simple insertion of a CEQA compliance condition will not save the agreement from being considered an approval requiring prior environmental review."[85]

The holding in *Save Tara* does not apply in this proceeding. The Commission is not conveying any property to NECO, or agreeing to explore or move forward with a public-private partnership with NECO. The Commission also is not granting approval for construction of Puente to proceed. Commission approval of the Puente Contract also does not, and could not, commit the CEC to approve the Puente AFC or limit the scope of the CEC's environmental review of the Puente project. Although the City and other parties have insisted on using this proceeding to object to Puente on environmental grounds, the only action that the applicant has requested with respect to Puente is for the Commission to approve the Puente Contract as reasonable and authorize rate recovery. Consistent with the Commission's long-standing and recently affirmed precedent on utility power purchase agreements, approval of the Puente

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84 *Save Tara v. City of West Hollywood,* 45 Cal. 4th 116, 121 (2008).

85 *Id.*, p. 132.

Contract is not a "project" for purposes of CEQA. NECO's testimony about how it views its financial risks does not change this well settled legal conclusion.

Finally, even if the Commission's approval of the Puente Contract were technically a "project," which it is not for the reasons discussed above, CEQA provides an exemption for actions undertaken by public agencies relating to any thermal power plant that will be licensed by the CEC. Pursuant to California Public Resources Code Section 21080(b)(6), CEQA does not apply to:

> Actions undertaken by a public agency relating to any thermal powerplant site or facility, including the expenditure, obligation, or encumbrance of funds by a public agency for planning, engineering, or design purposes, or for the conditional sale or purchase of equipment, fuel, water (except groundwater), steam, or power for a thermal powerplant, if the powerplant site and related facility will be the subject of an environmental impact report, negative declaration, or other document, prepared pursuant to a regulatory program certified pursuant to Section 21080.5, which will be prepared by the State Energy Resources Conservation and Development Commission, by the Public Utilities Commission, or by the city or county in which the powerplant and related facility would be located if the environmental impact report, negative declaration, or document includes the environmental impact, if any, of the action described in this paragraph.[86]

The CEC is the "State Energy Resources Conservation and Development Commission" referenced in the statute, and its thermal power plant siting and environmental review process is a certified regulatory program pursuant to California Public Resources Code Section 21080.5. The CEC's certified regulatory program entails a full environmental review of potential project impacts and imposes requirements necessary to ensure that all potential environmental impacts are mitigated to below significant levels. This further demonstrates that the City's CEQA argument is baseless.

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[86] *See also* CEQA Guidelines, 14 Cal. Code Regs. Section 15271.

G. The City's Challenge To Puente's Size Is Contrary To The Record.

The City argues that the size of the Puente Contract is "unjustifiable" based on the City's interpretation of the CAISO's studies.[87] The City's argument is contrary to the testimony of the CAISO's witness, who cautioned that the resources for which SCE seeks approval in this proceeding "are only a portion of those necessary to meet reliability needs in the Moorpark sub-area."[88] SCE's testimony also explains that in order to meet the minimum procurement level of 215 MW that the Commission required in Decision 13-02-015, it was necessary to select a large gas-fired project, and Puente was the most cost effective gas-fired generation offer.[89]

H. CEJA Misinterprets The Commission's Guidance On Qualitative Considerations In An RFO.

CEJA argues that SCE's evaluation of offers in the RFO failed to comply with Commission decisions requiring consideration of environmental justice impacts.[90] CEJA's argument misinterprets the Commission's guidance on the use of qualitative considerations in an RFO. CEJA relies on Decision 07-12-052, where the Commission stated that "[t]he evaluation criteria used in competitive solicitations must be clear, transparent, and available to potential bidders early enough in the procurement process to permit potential bidders to tailor their projects to fit the utility's actual needs."[91] The Commission then stated that: "We discuss below certain bid evaluation metrics that we urge the utilities, in conjunction with Independent Evaluators, Procurement Review Groups and Energy Division, to consider when developing the RFO bid documents and process."[92] The Commission found that utilities should consider

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87 City of Oxnard Opening Brief, pp. 20-21.

88 Exhibit CAISO-1 (Sparks), p. 3 line 22 through p. 4 line 1.

89 Exhibit SCE-7 (Cushnie), p. 1 line 12 through p. 2 line 1; Exhibit SCE-1 (Singh), p. 45 line 18 through p. 46 lines 2, 9-10.

90 CEJA Opening Brief, pp. 5-10.

91 Decision 07-12-052, p. 155.

92 *Id.*

capacity and energy benefits, resource diversity, portfolio fit, local reliability/resource adequacy, congestion costs, credit and collateral, debt equivalence, potential treatment under financial accounting rules, and transmission costs/savings, as well as "disproportionate resource sitings in low income and minority communities, and environmental impacts/benefits (including Greenfield vs. Brownfield development)."[93]

In suggesting that utilities should consider these bid evaluation metrics, the Commission did not specify that utilities must give disproportionate consideration to environmental justice factors over other qualitative considerations such as the preference for using brownfield sites rather than greenfield sites. The Commission also did not specify that qualitative considerations would override the utilities' quantitative analysis of which resources are the lowest cost and best fit for the utility's need. Utilities have flexibility to apply relevant qualitative considerations in their RFO resource evaluations, as long as they demonstrate how resource selections were made and justify their selected contracts.

SCE complied with those requirements in this proceeding. SCE's testimony and the Independent Evaluator's report show that SCE selected the winning contracts for the Moorpark sub-area based primarily on its quantitative analysis of net market value – namely, the valuate of a resource's energy, ancillary services, and capacity benefits, minus fixed and variable offer-related costs.[94] SCE also assessed non-quantifiable characteristics of each offer. SCE's selection process revealed that the Puente Contact was the most cost-effective gas-fired offer, and it also satisfies the Commission's preference for locating new capacity at brownfield sites instead of greenfield sites.

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93 *Id.*, pp. 156-157.

94 Exhibit SCE-1 (Singh), pp. 30-49; Exhibit SCE-2, Appendix D (Independent Evaluator Report), p. 5.

Siting Puente at the existing Mandalay site also provides environmental benefits because it accommodates the potential retirement of almost 2,000 MW of aging OTC capacity with 262 MW of new fast-start peaking capacity. The OTC units in Oxnard require between 12 and 18 hours to start up, which means that they have emissions during the entire lengthy start up period, in addition to the time they operate to meet electricity needs.[95] In addition to being significantly smaller than the existing OTC capacity, Puente will be able to start and be at its full capacity in only 10 minutes, avoiding the significant start up emissions of the existing OTC units.[96] Moreover, unlike the existing OTC units, Puente will be able to be shut down at night and restarted the next day, further reducing emissions compared to the existing OTC units. Construction of Puente thus will result in a net environmental benefit to the local community.

CEJA also argues that SCE failed to favor renewable energy projects in environmental justice communities,[97] but the record shows that SCE selected every renewable offer available in the RFO for the Moorpark sub-area.[98]

I. CEJA Misinterprets The Record, Which Shows That SCE Selected Contracts Based On Its Least Cost Best Fit Quantitative Analysis.

CEJA argues that SCE's selections of the Puente Contract and the Puente Refurbishment Contract were inappropriately based on "qualitative" assessments regarding the risk of resource shortages due to the possible retirement of existing non-OTC peaking resources owned by NRG South.[99] This claim is contrary to the record. As stated above, SCE's testimony and the Independent Evaluator's report show that SCE selected the winning contracts for the Moorpark sub-area based primarily on its quantitative analysis of net market value – namely, the value of a

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95 Reporter's Transcript, Volume 2 (NRG/Gleiter), p. 351 lines 3-12.

96 Exhibit NRG-1 (Gleiter), p. 2 lines 24-28.

97 CEJA Opening Brief, p. 10.

98 Exhibit SCE-7 (Bryson), p. 14 lines 2-3.

99 CEJA Opening Brief, pp. 11-20.

resource's energy, ancillary services, and capacity benefits, minus fixed and variable offer-related costs.[100] SCE's selection process revealed that the Puente Contact was the most cost-effective gas-fired offer, and it also satisfies the Commission's preference for locating new capacity at brownfield sites instead of greenfield sites. Additional qualitative factors may have supported this selection, but the Puente Contract won due to its net market value.

SCE's testimony also shows that the Ellwood Refurbishment Contract offered a low cost solution to improve reliability in the Goleta service area, and SCE added the 0.5 MW Ellwood Storage Contract and a 1 MW rooftop solar project in Goleta to help address unique reliability concerns in Goleta. SCE's testimony explains that the set of selected contracts were "the best combination of offers" and "allowed SCE to select cost-competitive Preferred Resources offers."[101] The Independent Evaluator performed an independent, parallel evaluation of the offers and concluded that all of the selected contracts merit Commission approval "because the contracts' economics and their general terms and conditions represented the best resources available from a competitive solicitation."[102]

J. Parties Have Not Shown That Another RFO Would Produce Materially Greater Amounts Of Preferred Resources.

Sierra Club, the City and WBA unreasonably urge the Commission to reject the RFO results and require SCE to start over by conducting another RFO for preferred resources.[103] SCE explained that it selected every preferred resources final offer for the Moorpark sub-area other than energy storage, and had to select a large gas-fired generation offer to meet the minimum

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100 Exhibit SCE-1 (Singh), pp. 30-49; Exhibit SCE-2, Appendix D (Independent Evaluator Report), p. 5.

101 Exhibit SCE-1 (Singh), p. 46 lines 7-9.

102 Exhibit SCE-2, Appendix D (Independent Evaluator Report), p. 39.

103 Sierra Club Opening Brief, p. 5; City of Oxnard Opening Brief, pp. 25-26; WBA Opening Brief, p. 3.

procurement authorization of 215 MW.[104] Given that SCE just completed an exhaustive RFO process, it is not reasonable to expect that the results of a second RFO would produce materially greater amounts of preferred resources. Parties have not shown that a second RFO would yield a materially different result that the RFO that SCE just completed.

WBA argues that SCE should select alternative resources to meet local reliability needs in the Moorpark sub-area, but the resources described in WBA's testimony were not even bid into the RFO.[105] WBA's witness also admitted that the resources identified in WBA's testimony are "speculative numbers."[106] It would not be prudent to risk local reliability based on speculation about alternative resources.

III. CONCLUSION

For the reasons explained in NRG's opening brief and reinforced above, the Commission should approve all 11 contracts selected and executed by SCE for the Moorpark sub-area, including the Puente Contract, the Ellwood Refurbishment Contract, and the Ellwood Storage Contract. The Commission should approve all of these contracts without delay or condition.

August 5, 2015

Respectfully submitted,

/s/ Lisa A. Cottle

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104 Exhibit SCE-7 (Cushnie), p. 1 line 20 through p. 2 line 1.

105 Reporter's Transcript, Volume 1 (WBA/Perry), p. 161 line 18 through p. 163 line 5 and p. 165 lines 16-20.

106 Reporter's Transcript, Volume 1 (WBA/Perry), p. 166 line 9.

Appendix A

CEC Comments on Public Review Draft, California Coastal Commission
Sea-Level Rise Policy Guidance, July 20, 2015

DOCKETED

Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	205429
Document Title:	Letter Re: Comments on Public Review Draft, California Coastal Commission Sea-Level Rise Policy Guidance, dated July 20, 2015
Description:	N/A
Filer:	Alicia Campos
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	7/20/2015 1:30:15 PM
Docketed Date:	7/20/2015

CALIFORNIA ENERGY COMMISSION
1516 Ninth Street
Sacramento, California 95814
Main website: www.energy.ca.gov

July 20, 2015

California Coastal Commission
c/o Sea-Level Rise Working Group
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Comments on Public Review Draft, California Coastal Commission Sea-Level Rise Policy Guidance

Dear Sea-Level Rise Working Group,

The California Energy Commission appreciates the opportunity to comment on the Public Review Draft of the revised Sea-Level Rise Policy Guidance, dated May 27, 2015. The Guidance was reviewed by several divisions within the agency, and was of particular interest to staff of the Siting, Transmission, and Environmental Protection Division. During the licensing process of thermal power plants 50 megawatts or greater, Energy Commission staff provide an independent assessment of the proposed energy facility and ancillary facilities. As directed by Governor Executive Order S-13-08 for state agencies to plan for sea-level rise and climate impacts, staff include sea-level rise estimates in their assessment of a proposed project.

We support the Coastal Commission's effort to provide an overview of the best available science on sea level rise for California and recommended methodology for addressing it in Coastal Commission planning and regulatory actions. Our only concern is the document's reference to power plants. The Guidance specifically identifies power plants as critical infrastructure (page 80), therefore warranting special considerations such as applying a 500-year event design standard, assuming the highest sea-level rise projections, and protection from the worst-case future impacts (page 138).

Staff analyzes information specific to each proposed project and site location. We are concerned that by presenting all power plants as critical infrastructure, the public and intervening parties may believe that the Guidance recommends special considerations to all power plants without question. While the Energy Commission has exclusive jurisdiction over thermal power plants of 50 megawatts or greater, preempting the jurisdiction of all other state and local agencies, we do not wish to appear to be acting in conflict with the Guidance.

We recommend that "power plants" be removed from the third bullet on page 80 to avoid a default assumption that all power plants and ancillary facilities are critical. Alternatively, adding a statement or footnote to page 80 or 81, such as the following, may clarify how the Guidance document applies to power plants:

> "The lists of critical infrastructure can vary widely from community to community. For planning purposes, a jurisdiction should determine criticality based on the relative importance of its various assets for the delivery of vital services, the protection of special populations, and other important functions."

Also, Appendix F on page 283, under Public Works Facilities, please make the following edit:

(a) All production, storage, transmission, and recovery facilities for water, sewerage, telephone, and other similar utilities owned or operated by any public agency or by any utility subject to the jurisdiction of the Public Utilities Commission, ~~except for~~ except for energy facilities 50 megawatts or greater [which are regulated by the ~~Public Utilities~~ **California Energy** Commission].

Thank you again for the opportunity to provide comments. Please note that this letter contains comments from Energy Commission staff as it pertains to their assessment of new and replacement power plants in the coastal zone. If you have any questions, please contact Matthew Layton at matthew.layton@energy.ca.gov or (916) 654-3868.

Sincerely,

Originally Signed By
Roger E. Johnson, Deputy Director
Siting, Transmission, and
Environmental Protection Division

cc: Robert Oglesby
Matthew Layton
Marylou Taylor

EXHIBIT 8

DOCKETED

Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	205930
Document Title:	City of Oxnard Comments Responding to CEC Issues Identification of August 10, 2015
Description:	N/A
Filer:	PATRICIA LARKIN
Organization:	SHUTE, MIHALY & WEINBERGER LLP
Submitter Role:	Intervenor Representative
Submission Date:	8/31/2015 9:54:55 AM
Docketed Date:	8/31/2015

California Energy Commission (CEC)
Issues Hearing / Environmental Scoping Meeting
NRG Puente Project (15-AFC-01)

City of Oxnard Comments
Responding to CEC Issues Identification
of August 10, 2015

Chris Williamson
Principal Planner

August 27, 2015

CITY OF OXNARD CALIFORNIA

Inaccurate Description of Surrounding Area/Context.

Inadequate CEC issue Identification:

1. Coastal Hazards/Sea Level Rise Question Reliability
2. New Earthquake Tsunami Risk Study Available
3. Regional and Local Coastal Views Made Worse
4. Biology and Sensitive Habitat Surrounds the Site
5. Fire and Police: Not Certain During Emergencies
6. Environmental Justice, Disproportionate Impact
7. Five Feasible Inland Alternatives Sites

CITY OF OXNARD CALIFORNIA

Inaccurate Description of Surrounding Area

pg. 1 "…industrial uses to the north, south, and east…"

WEST: one sand dune, State Tide Lands, Pacific Ocean.

NORTH: 28 acres owned by City, permanent wetlands restoration, and McGrath State Beach (State Parks).

SOUTH: 16 acres owned by SCE, 1.4 acres by McGrath Farms, and 92 acres by Ventura County and State of California, part of McGrath State Beach and planned for dune habitat and park development.

EAST: 37 acres of sensitive habitat with a 1.5 acre SCE substation, and the "Edison" canal that has potential for recreation reuse.

CITY OF OXNARD CALIFORNIA

Mandalay is…

…an isolated 50-year old "legacy" power plant site, with nearby oil facilities, surrounded by residential, resource, and recreation uses.

…would CEC permit a power plant here if it were raw land ?

CITY OF OXNARD CALIFORNIA

Inadequate CEC issue Identification:

1 Coastal Hazards/Sea Level Rise Question Reliability

Listed under "Soil Water and Geologic Resources"

Puente should be evaluated as "critical public infrastructure" under worst case coastal hazards with highest sea level rise.

SCE's CPUC testimony of "Basis for…Need"

- Pg 5 "…with respect to critical contingency…"
- Pg. 7 "Service disruption…including critical services"

NRG's testimony submitted to the CPUC:
"P3 will ensure the long-term viability of this existing critical generating location and will provide essential electrical services to the residents of Ventura County…"

CITY OF OXNARD CALIFORNIA

2 New Earthquake Tsunami Risk Study Available

New information just released

B2 THURSDAY, AUGUST 20, 2015 Los Angeles Times LATIMES.COM

EARTHQUAKE WATCH

A new Ventura tsunami scenario

Floodwaters would hit areas once thought to be out of reach, a study suggests

RONG-GONG LIN II

In recent years, some scientists have been warning that Ventura County is at greater seismic risk than previously thought.

Now, a new study has found that a major quake in the area could pose a heightened tsunami threat.

A study by UC Riverside and U.S. Geological Survey scientists published Tuesday said tsunami flood waters could reach points in the Ventura vicinity beyond the area currently marked in California's official tsunami inundation map. Tsunami wave heights could approach 20 feet in the Ventura Harbor and Channel Islands Beach area near Oxnard.

A California Geological Survey official said the agency would study the report. The agency is creating a second edition of tsunami inundation maps after publishing the first version about six years ago.

The latest study comes amid new focus on the earthquake faults that stretch deep under the Santa Barbara and Ventura areas. Previously, some seismic experts thought that the faults in the area posed only a moderate threat. But research in recent years suggests they are connected in a way that could cause a magnitude 7.7 to 8.1 earthquake.

The latest study focuses on a hypothetical scenario in which a magnitude 7.7 earthquake strikes nine miles under the Earth's surface northeast of Santa Barbara, creating a tsunami.

WAVES POUND near homes in Ventura during a winter storm in 2010. A new study focuses on a hypothetical scenario in which a magnitude 7.7 earthquake strikes nine miles under the Earth's surface northeast of Santa Barbara, creating a tsunami.

THURSDAY, AUGUST 20, 2015

VENTURA COUNTY STAR

LE GROUND ON HOMELESS PROGRAM: LOCAL, 1B $1.00

Quake model raises issues

By Cheri Carlson
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A 7.7-magnitude earthquake off the Ventura coast could generate a tsunami that would hit the shore within 30 minutes, sending waves up to a mile inland in some areas.

That's according to a UC Riverside study published this week in the journal Geophysical Research Letters.

OXNARD CALIFORNIA

3 Regional and Local Coastal Views Made Worse

Incredibly, views and aesthetics not identified as an issue.
"Doubling" of already impacted view is doubling the impact.
"It's already bad" suggests never trying to improve views?
NRG CEC application clearly states Mandalay remains after 2020.

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If approved, Oxnard would have **four** beachfront power plants.

How can we ever get rid of these obsolete dinosaurs ?

4 Biology and Sensitive Habitat Surrounds the Site

City has draft Environmentally Sensitive Habitat (ESHA) mapping completed for the Local Coastal Plan (LCP) Update.

ESHA surrounds the P3 project site (slide 2).

CEC does acknowledge predatory bird threat to EPA-listed Snowy Plover and Least Tern nesting sites just north and south of the existing power plant.

P3 will add more potential predation of Federally-protected beach nesting sites, and around McGrath Lake.

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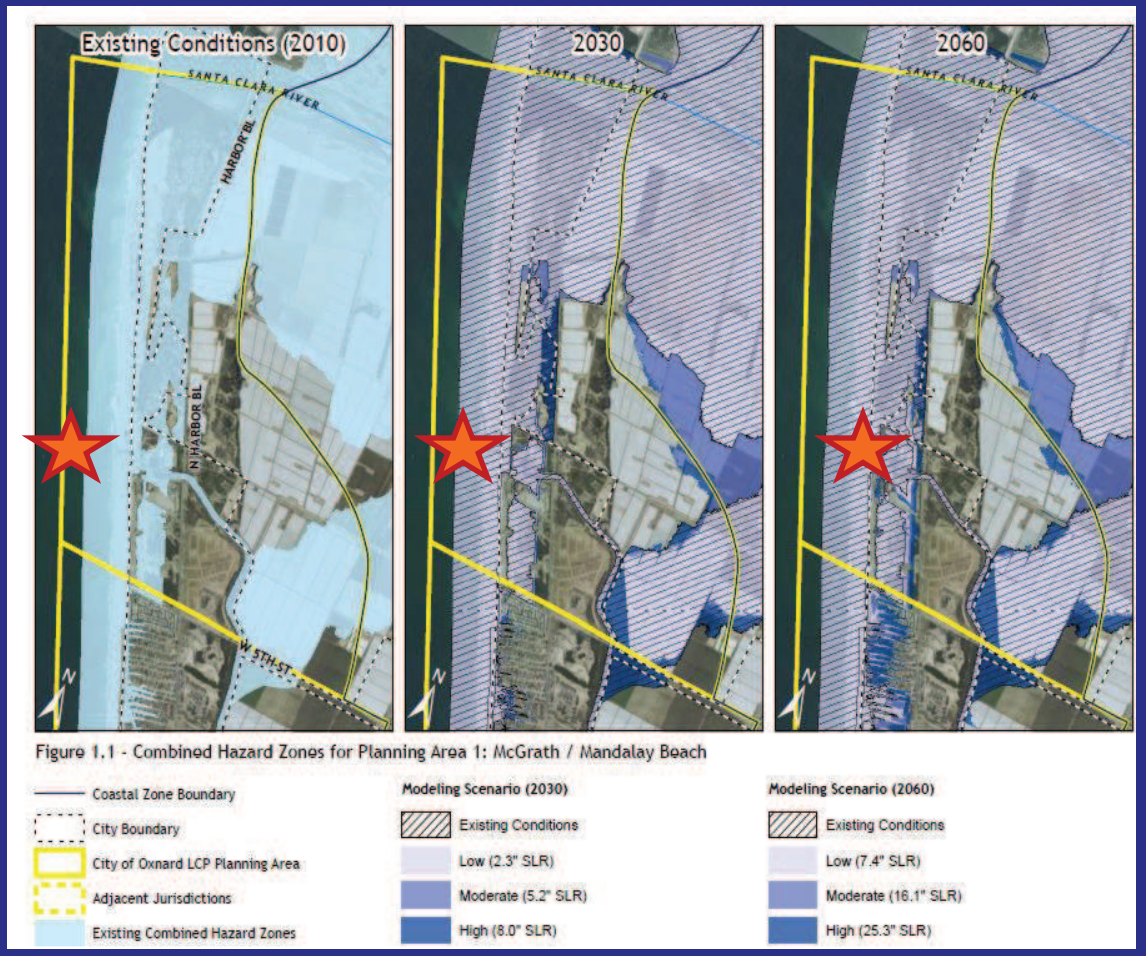
5 Fire and Police: Not Certain during Emergencies

City mapping shows Harbor Blvd. flooded under existing and 2030 scenarios.

Police and Fire Departments have not completed their 30-year reviews.

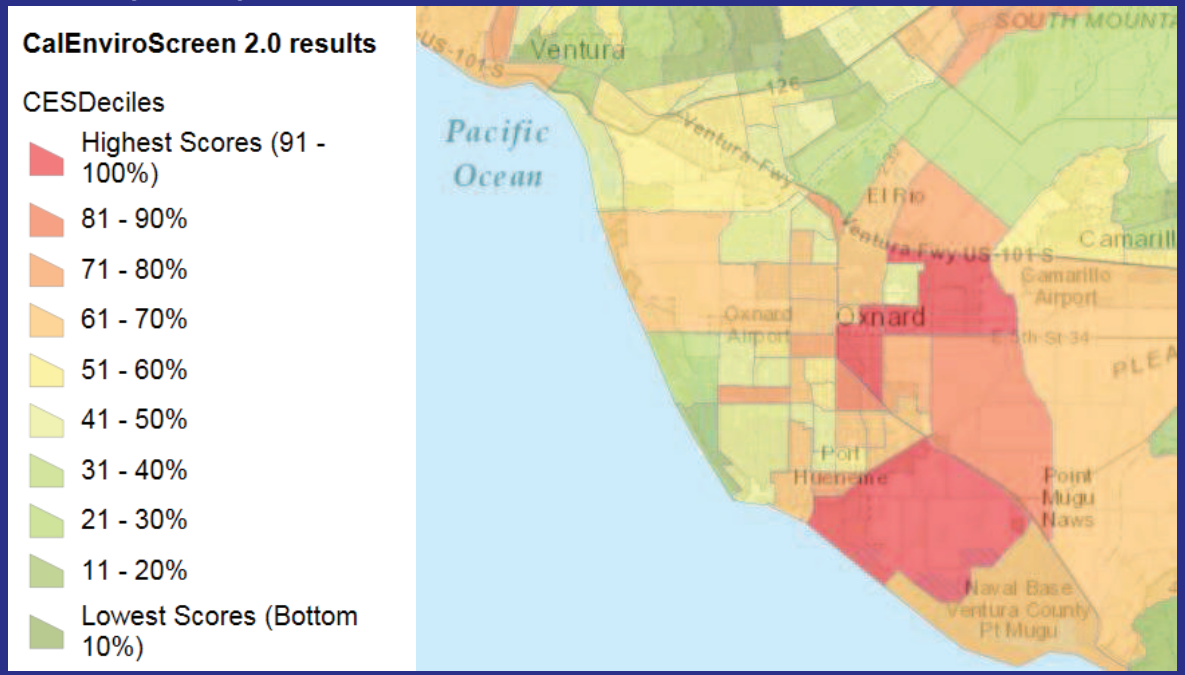
Must include County Public Works, Fire, and Sheriff Departments.



6 Environmental Justice, Disproportionate Impact

Oxnard a majority-minority community:
74% Hispanic Origin + 10% Other Non-White total = 84%

CalEnviroscreen 2.0 categorizes much of the area disadvantaged.
With three power plants, landfills, and EPA superfund site,
Oxnard is disproportionately impacted.



7 Five Feasible Inland Alternatives Sites

Close to high pressure gas lines and SCE transmission lines.

Two within Oxnard city limits, zoned industrial, vacant:

1. Power Machinery/Camino Avenue
2. NEC Del Norte & Fifth Street

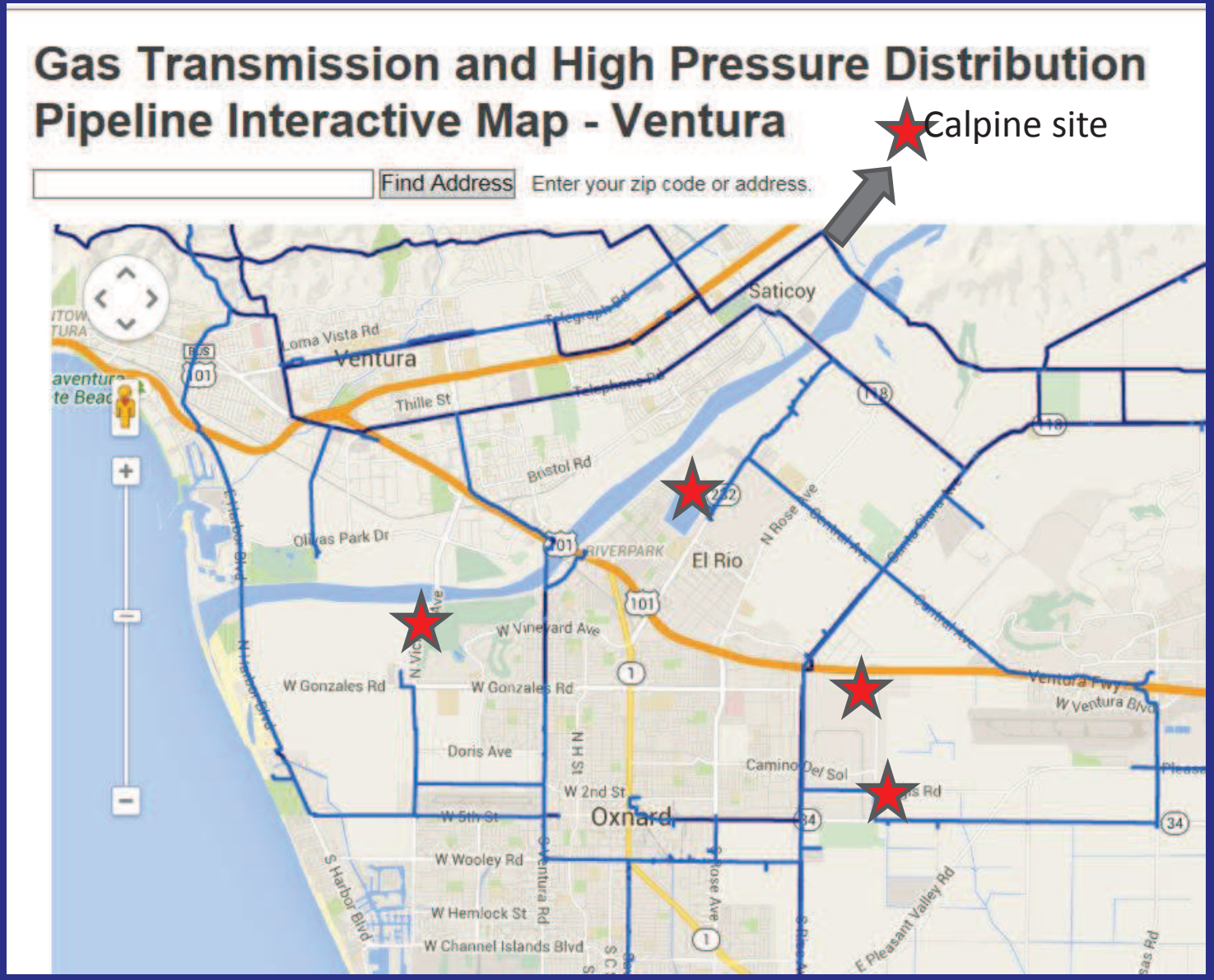
Two could be annexed, vacant, voter approval not required:

3. Sanitation District Flower Field
4. Beedy Street

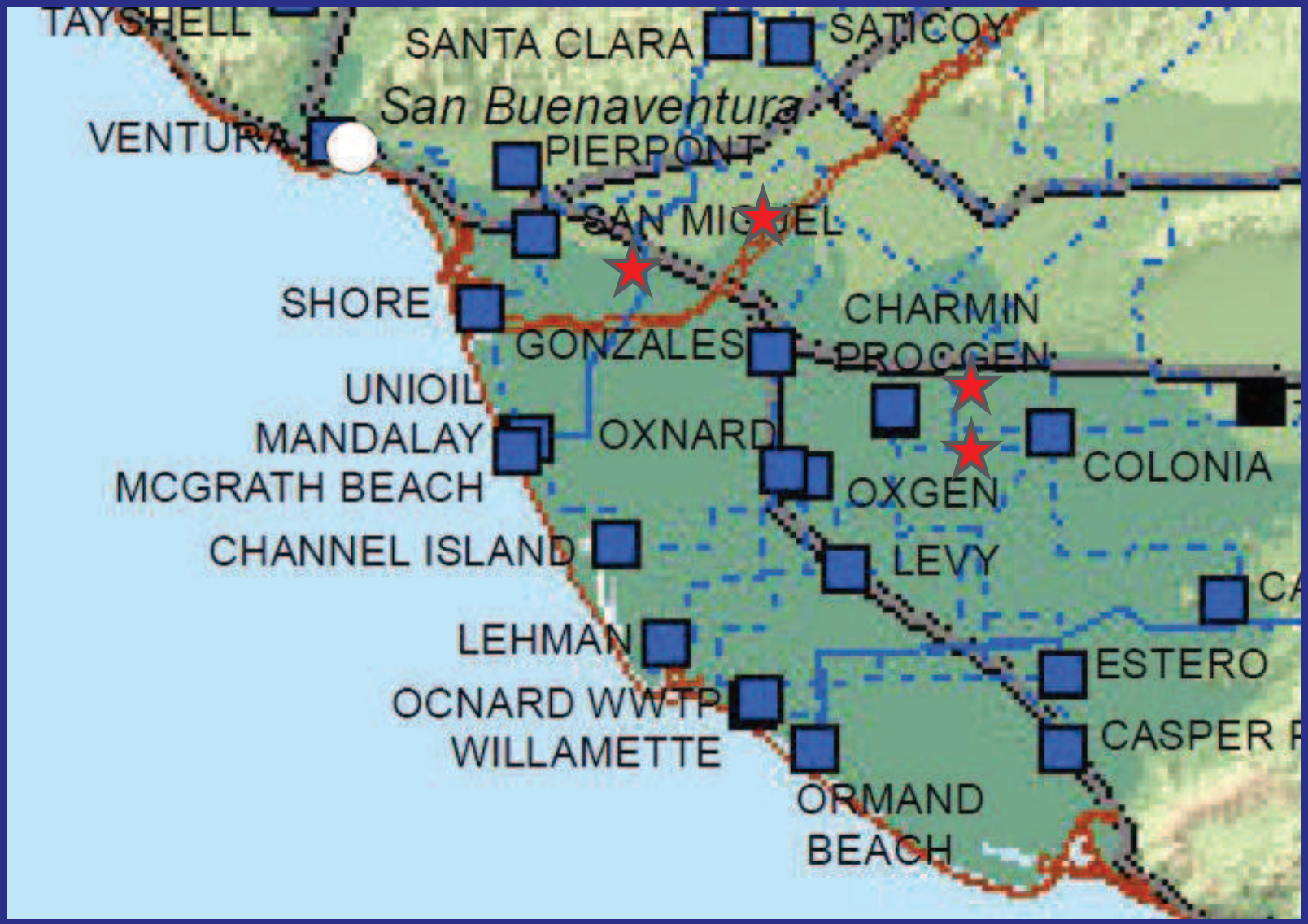
Mission Rock “Calpine” site near Santa Paula:

5. Mission Rock Energy Center

Need to be near high-pressure natural gas line



…also near SCE Transmission Lines/Corridors

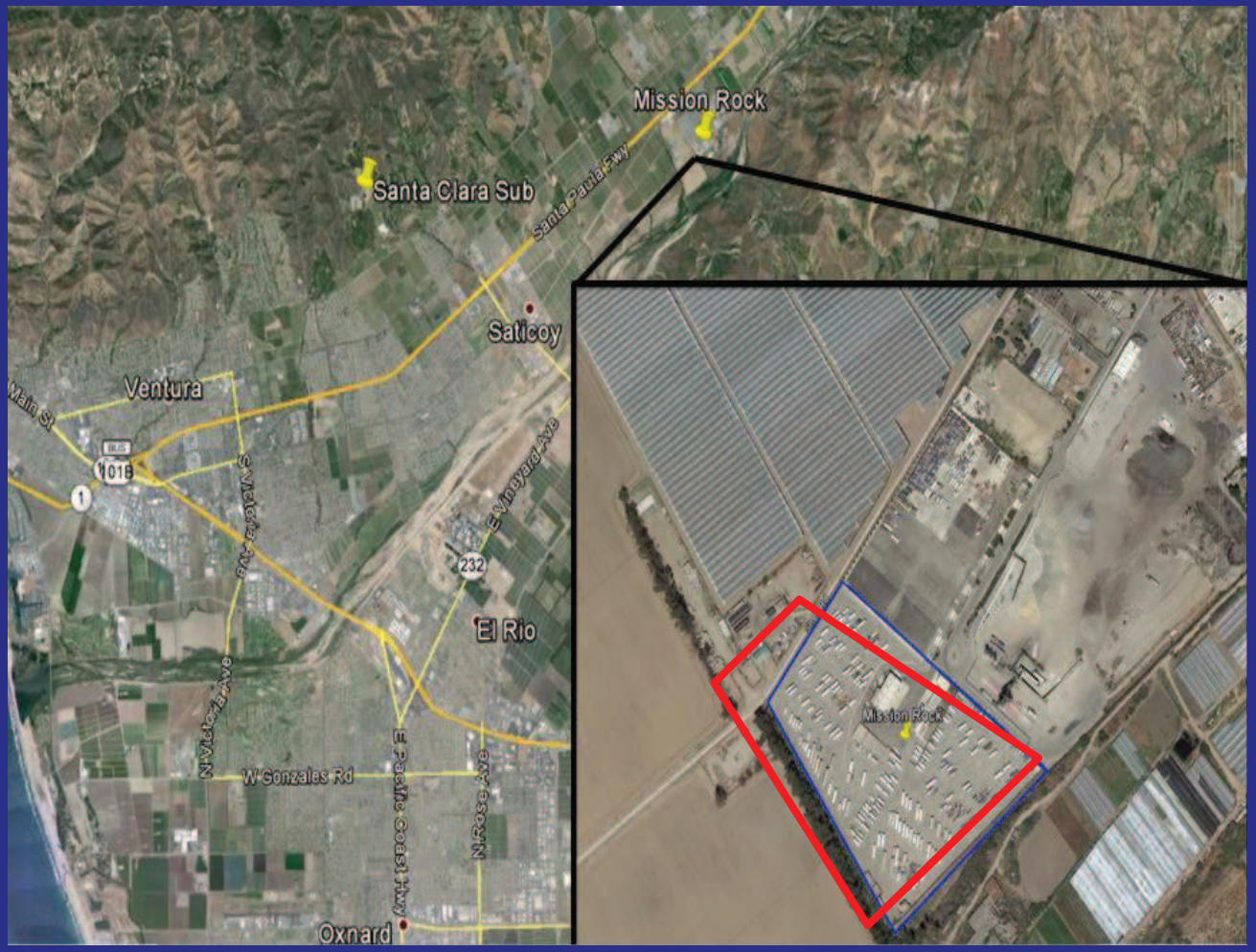


#1 Power Machinery/Camino Real Business Park

#2 Del Norte/Fifth Street

#5 Mission Rock Energy Center

10 miles inland
Industrial-zoning
10 acres
Low-profile (80ft)
Easements obtained
Recycled water
Compatible uses



Source:
"Alternative proposed to prevent peaker plant along Oxnard coast"
Pacific Coast Business Times/ Friday, July 24th, 2015 Calpine

..conclusion:

California coastline is special – 1972 Initiative and the Coastal Act.

We are implementing Federal and State Law re: endangered species, affordable coastal recreation, & adaptation to sea level rise.

50+ years ago, many regrettable local land use decision were made. Time for new directions as we update our Local Coastal Program.

Do not condemn us to another 30 years of coastal power plants because NRG maximizes a return on investment, poor choices.

There are feasible, safer, more reliable, and community supported alternative sites that appear to meet SCE criteria.

Submitted to CEC AFC Docket 15-AFC-01

Thank you for your Attention.

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