Marin Clean Energy
Executive Committee Meeting
Wednesday, October 7, 2015
10:00 A.M.

The Barbara George Conference Room
1125 Tamalpais Avenue, San Rafael, CA 94901

Agenda Page 1 of 1

1. Board Announcements (Discussion)
2. Public Open Time (Discussion)
3. Report from Chief Executive Officer (Discussion)
4. Approval of 9.2.15 Meeting Minutes (Discussion/Action)
5. The Charles F. McGlashan Advocacy Award (Discussion/Action)
6. MCE Compensation Analysis Update (Discussion/Action)
7. MCE Strategic Planning Update (Discussion)
8. Update on MCE Solar One Draft Environmental Impact Report (Discussion/Action)
9. Review Draft 10.15.15 Board Agenda (Discussion)
10. Board Member & Staff Matters (Discussion)
11. Adjourn

1125 Tamalpais Avenue
San Rafael, CA 94901

1 (888) 632-3674
mceCleanEnergy.org

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MARIN CLEAN ENERGY
EXECUTIVE COMMITTEE MEETING
Wednesday, September 2, 2015
10:30 A.M.

The Barbara George Conference Room
1125 Tamalpais Avenue, San Rafael, CA 94901

Roll Call

Present: Kate Sears, County of Marin
Bob McCaskill, City of Belvedere
Sloan Bailey, Town of Corte Madera
Kevin Haroff, City of Larkspur
Denise Athas, City of Novato

Absent: Tom Butt, City of Richmond
Ford Greene, Town of San Anselmo

Staff: Dawn Weisz, Chief Executive Officer
Greg Brehm, Director of Power Resources
Alex DiGiorgio, Community Development Manager
John Dalessi, Pacific Energy Advisors - Consultant

Action Taken:

Agenda Item #4 – Approval of 8.5.15 Meeting Minutes (Discussion/Action)

M/s Haroff/Sears (passed 2-0) the approval of 8.5.15 Meeting Minutes. Directors Athas, Bailey and McCaskill abstained. Directors Butt and Greene were absent.

Kate Sears, for Executive Committee Chair, Tom Butt

ATTEST:

Dawn Weisz, Chief Executive Officer

October 7, 2015

TO: Marin Clean Energy Executive Committee

FROM: Allison Hang, Community Development Manager

RE: Charles F. McGlashan Advocacy Award Nominations (Agenda Item #05)

Dear Board Members:

SUMMARY:

The Charles F. McGlashan Advocacy Award was established to recognize individuals and organizations who have demonstrated passion, dedication and leadership on behalf of MCE. The award also honors and commemorates the life and legacy of environmental leadership left behind by former MCE Chairman Charles F. McGlashan.

Recipients of the award are recognized with a ceremony held at a regular meeting of the MCE Board of Directors. Recipients will also have their names inscribed on a plaque that shares other awardee names and is displayed outside the Charles McGlashan Room at the MCE offices.

It is the responsibility of the Executive Committee to review nominations and make recommendations for which advocate should be recognized with the Charles F. McGlashan Advocacy award.

To date, the Charles F. McGlashan Advocacy Award has been awarded to Barbara George in 2011, The Mainstreet Moms in 2012, Lea Dutton in 2013, and Doria Robinson in 2014.

This year's Charles F. McGlashan Advocacy Award nominations include Sustainable Napa County, Constance Beutel, and Nancy Vernon

NOMINATIONS:

Sustainable Napa County

As a cornerstone of sustainability in Napa County, Sustainable Napa County (SNC) has played a key role in Napa County's smooth transition to MCE's service area. SNC was an early supporter of the County's decision to join MCE. SNC representatives participated in MCE's Community Leader Advisory Group, actively connected MCE to outreach opportunities, and regularly sent out information via their newsletter. SNC also provided valuable feedback on outreach materials and helped resolve customer issues by connecting them with appropriate MCE staff. SNC has regularly provided input and feedback for the development of MCE's 2016 and beyond Energy Efficiency programs so that customers in Napa County are best served. SNC spearheaded the effort to

expand access to MCE's renewable energy options to the jurisdictions within Napa County. Representatives arranged and attended Council meetings with all five jurisdictions. Their leadership resulted in all five jurisdictions submitting letters of interest to MCE. SNC also shares MCE's strong commitment to the local development of renewable energy. Collaboration and introductions along these lines has already identified opportunities.

Constance Beutel

Constance Beutel was instrumental in Benicia's membership in MCE. Ms. Buetel was the first chairperson of Benicia's Community Sustainability Commission when it was formed in 2010. The commission has a strong emphasis on public outreach and education, hosting workshops such as "The Energy Symposium" and "Clean Energy/Community Choice Aggregation" panel. Under Ms. Beutel's leadership, the Sustainability Commission recommended Community Choice Aggregation to the City of Benicia. Ms. Beutel also played a pivotal role in MCE's enrollment outreach in Benicia. She distributed information, provided regular feedback on outreach activities, and connected MCE with confused customers. These efforts made a tangible impact on the success of MCE's outreach. Ms. Beutel remains engaged with MCE's work. She provided feedback on MCE's 2016 and beyond Energy Efficiency programs. She also attended MCE's advocacy training to continue effective outreach in her community.

Nancy Vernon

Even within a community as enthusiastic and supportive of MCE as San Anslemo, Nancy Vernon stands out for her steadfast advocacy of MCE's programs and service options. As an active member of the Town's Quality of Life Committee, Ms. Vernon has championed MCE's Deep Green 100% renewable service option for its economic and environmental benefits to the community. She collaborated closely with MCE's Public Affairs Team to initiate a Deep Green enrollment campaign among local businesses, and recruited several to become Deep Green Champions featured on MCE's marketing materials. Ms. Vernon has continued to model excellent advocacy by coordinating with the Mainstreet Moms, participating in MCE's advocacy training, and voluntarily distributing Deep Green materials throughout San Anselmo. Through friendly competition, Ms. Vernon has sought to make the Town MCE's 'Deepest Green' community—and inspired others to do the same within neighboring MCE communities.

RECOMMENDATION:

Select the 2015 recipient of the Charles F. McGlashan Advocacy Award to be presented at the October, 2015 regular meeting of the MCE Board of Directors.

October 7, 2015

TO: Marin Clean Energy Executive Committee

FROM: Katie Gaier, Human Resources Manager

RE: MCE Compensation Analysis Update (Agenda Item #6)

SUMMARY:

On May 7, 2010, when Marin Clean Energy switched on power to 5400 customers, the staff consisted of four employees. In the five years since, the number of service areas, the volume of customers, and the size of staff have grown significantly. With the recent hire of a Community Power Organizer and the upcoming selection of Finance and Project Manager, MCE will be an agency with 32 regular hire employees across its five departments: Legal and Regulatory, Public Affairs, Procurement, Energy Efficiency, and Internal Operations, plus the Chief Executive Officer. As new positions have been added, salaries were set by external surveys or internal comparisons or a combination of the two.

In the last year, MCE has conducted twelve recruitments to fill fifteen positions in all areas of the organization. Prior to recruiting for several of the positions, it was necessary to conduct classification and compensation studies since the positions were newly created in order to meet MCE's expanding service areas. Many of the positions were difficult to fill due to the salary ranges resulting in additional compensation studies and creation of higher tiers relative to existing positions. At least two candidates declined job offers because MCE salaries were lower than what the candidates were making with other public or private agencies. Increasing salaries at some levels resulted in compaction with the supervisory positions and increases in supervisory salaries were made. Rather than continue to study positions on an ad-hoc basis, it was determined that the best approach to handling salary review was to embark on a comprehensive compensation analysis of all MCE positions. External consultants were engaged in May to survey a group of agencies that likely had similar positions.

As the first Community Choice Aggregation program in the state and due to the unique nature of MCE positions, it has often been difficult to find positions that are comparable. Typically, jobs that are similar to MCE are in the private sector, and compensation information in that sector can be difficult to obtain. However, with the growth in CCA's (Sonoma Clean Power and Lancaster Choice Energy) as well as public municipalities that provide similar services, there were at least five matches for almost all of the MCE positions. The methodology which was used by the consultants was to review the websites and/or talk to Human Resources representatives at the identified survey agencies. The surveys and the respective job

descriptions were reviewed by MCE staff and a final product was delivered to MCE in early September.

Comparable jobs were found across the state, including the City of Redding in the North, the City of Anaheim in Southern California, and the City of Palo Alto in the Bay Area. For the most part, MCE salaries were behind the market compared to similarly situated positions in other jurisdictions. Based on the results of the survey, there are 26 positions which are below the median in the market at either the bottom or the top of the range or both.

Because comparable positions were found in a broad geographic area, MCE staff reviewed the cost of housing (as provided by the California Association of Realtors as of June 2015) in Marin County compared to the county of the surveyed jurisdictions. Compared to Marin, the average cost of single family home in the comparator counties is 58%. Some jurisdictions such as San Francisco and San Mateo counties had a higher cost of housing than Marin. The majority of the other counties were between 40% and 70% compared to Marin. However, because the federal standard for the percent of income that should be spent on housing is 30%, the average impact on compensation ranges in those areas was adjusted yielding and average difference of 17%.

Staff also researched the consumer price index (as provided by the Bureau of Labor Statistics) in the San Francisco Bay Area compared to consumer price indices in the regions where surveyed jurisdictions were found. The cost of living is based on the cost of items including food, energy, clothing and so on. Housing is included only as the amount for which a homeowner could rent his or her principal residence. The baseline is set at 100 from the first period of measurement and is reviewed regularly by the BLS to reflect the increases. For example, the San Francisco Bay Area bimonthly baseline is 100 as of 1967 and the current (as of August 2015) index is at 259. The average increase to account for the difference in the cost of living in the surveyed jurisdictions outside of the San Francisco Bay Area region would be 18%. However, the majority of the agencies were in the range of 94% to 96% of the San Francisco Bay Area cost index.

In order to remain competitive in the labor market and to continue to attract and retain highly knowledgeable and skilled employees, MCE management recognizes the challenges of keeping pace with salaries as well as the factors of housing and living costs in this area.

Therefore, there are several parameters that could be implemented in order to address these challenges:

1. Where compensation ranges for MCE positions are below the median of equivalent positions in the market at one or both ends of the range, to bring the salary ranges for the positions equal to the median in the market;
2. To attract and retain the highest quality candidates for MCE positions compensation ranges could be adjusted to the median if below, and then further adjusted to bring all salary ranges above the median as determined by the Executive Committee.
3. To account for the cost of housing in Marin and/or the consumer price index in the region compared to the average of the surveyed agencies by individual job class, compensation ranges could be adjusted to the median if below, and then further adjusted to bring the salary range by job class above median reflective of the cost of housing in the comparator agencies.

RECOMMENDATION:

Provide direction to staff regarding parameters for compensation analysis recommendations, and direct staff to submit compensation analysis adjustments to the MCE Board for approval.

October 7, 2015

TO: Marin Clean Energy Executive Committee

FROM: Sarah Estes-Smith, Internal Operations Coordinator

RE: Strategic Planning Update and First Agreement with D.A. Jordan, DHA (Agenda Item #07)

ATTACHMENT: Draft First Agreement with D.A. Jordan, DHA

Dear Executive Committee Members:

SUMMARY:

Over the past year, MCE has grown significantly, hiring 15 new staff members and expanding to include four new member communities. Currently, MCE is poised to consider the inclusion of several additional communities. Given the amount of growth, past and future, MCE identified a need for strategic planning activities to help define and set goals according to its internal and external strengths, opportunities, weaknesses, and challenges.

MCE management conducted a field assessment to determine which providers would be able to provide this service to MCE. MCE inquired with seven entities and requested proposals from five. MCE management then reviewed proposals from four consultants and determined that Dr. David A. Jordan would provide the most thorough organizational analysis process, and be able to deliver an actionable strategic plan within a reasonable budget.

MCE has drafted the attached contract with Dr. Jordan to interview key stakeholders, conduct an environmental/organizational analysis, formulate strategies that address MCE's goals and objectives, and design a system that would allow MCE to implement the strategic plan and evaluate progress. Dr. Jordan would visit MCE offices three to four times, and has proposed to begin in mid-October, with an anticipated completion date of January 31, 2016. The contract will not exceed $34,000.

Recommendation: Approve the First Agreement with D.A. Jordan, DHA.

MARIN CLEAN ENERGY
STANDARD SHORT FORM CONTRACT

FIRST AGREEMENT
BY AND BETWEEN
MARIN CLEAN ENERGY AND D.A. JORDAN, DHA

THIS FIRST AGREEMENT ("Agreement") is made and entered into this day **October 15, 2015** by and between MARIN CLEAN ENERGY, hereinafter referred to as "MCE" and D.A. JORDAN & ASSOCIATES, hereinafter referred to as "Contractor."

RECITALS:

WHEREAS, MCE desires to retain a person or firm to provide the following services: organizational analysis and strategic planning consulting services as requested and directed by MCE;

WHEREAS, Contractor warrants that it is qualified and competent to render the aforesaid services;

NOW, THEREFORE, for and in consideration of the agreement made, and the payments to be made by MCE, the parties agree to the following:

1. SCOPE OF SERVICES:
Contractor agrees to provide all of the services described in **Exhibit A** attached hereto and by this reference made a part hereof.

2. FURNISHED SERVICES:
MCE agrees to make available all pertinent data and records for review, subject to MCE Policy 001 - Confidentiality.

3. FEES AND PAYMENT SCHEDULE; INVOICING:
The fees and payment schedule for furnishing services under this Agreement shall be based on the rate schedule which is attached hereto as **Exhibit B** and by this reference incorporated herein. Said fees shall remain in effect for the entire term of the Agreement. Contractor shall provide MCE with his/her/its Federal Tax I.D. or Social Security number prior to submitting the first invoice. Contractor is responsible for billing MCE in a timely and accurate manner. Contractor shall invoice MCE on a monthly basis for any services rendered or expenses incurred hereunder. Fees and expenses invoiced beyond 90 days will not be reimbursable. The final invoice must be submitted within 30 days of completion of the stated scope of services or termination of this Agreement.

4. MAXIMUM COST TO MCE:
In no event will the cost to MCE for the services to be provided herein exceed the maximum sum of **$34,000**.

5. TIME OF AGREEMENT:
This Agreement shall commence on **October 15, 2015**, and shall terminate on **March 31, 2016**. Certificate(s) of Insurance must be current on the day the Agreement commences and if scheduled to lapse prior to termination date, must be automatically updated before final payment may be made to Contractor.

6. INSURANCE AND SAFETY:
All required insurance coverages shall be substantiated with a certificate of insurance and must be signed by the insurer or its representative evidencing such insurance to MCE. The general liability policy shall be endorsed naming Marin Clean Energy and its employees, officers and agents as additional insureds. The certificate(s) of insurance and required endorsement shall be furnished to MCE prior to commencement of work. Each certificate shall provide for thirty (30) days advance written notice to MCE of any cancellation or reduction in coverage. Said policies shall remain in force through the life of this Agreement and shall be payable on a per occurrence basis only, except those required by paragraph 6.4 which may be provided on a claims-made basis consistent with the criteria noted therein.

Nothing herein shall be construed as a limitation on Contractor's obligations under paragraph 16 of this Agreement to indemnify, defend and hold MCE harmless from any and all liabilities arising from the Contractor's negligence, recklessness or willful misconduct in the performance of this Agreement. MCE agrees to timely notify the Contractor of any negligence claim.

Failure to provide and maintain the insurance required by this Agreement will constitute a material breach of the agreement. In addition to any other available remedies, MCE may suspend payment to the Contractor for any services provided during any time that insurance was not in effect and until such time as the Contractor provides adequate evidence that Contractor has obtained the required coverage.

6.1 GENERAL LIABILITY

The Contractor shall maintain a commercial general liability insurance policy in an amount of no less than one million dollars ($1,000,000) with a two million dollar ($2,000,000) aggregate limit. MCE shall be named as an additional insured on the commercial general liability policy and the Certificate of Insurance shall include an additional endorsement page. (see sample form: ISO - CG 20 10 11 85).

6.2 AUTO LIABILITY

Where the services to be provided under this Agreement involve or require the use of any type of vehicle by Contractor in order to perform said services, Contractor shall also provide comprehensive business or commercial automobile liability coverage including non-owned and hired automobile liability in the amount of one million dollars combined single limit ($1,000,000.00).

6.3 WORKERS' COMPENSATION

The Contractor acknowledges the State of California requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of the Labor Code. If Contractor has employees, a copy of the certificate evidencing such insurance or a copy of the Certificate of Consent to Self-Insure shall be provided to MCE prior to commencement of work.

6.4 PROFESSIONAL LIABILITY INSURANCE

Coverages required by this paragraph may be provided on a claims-made basis with a "Retroactive Date" either prior to the date of the Agreement or the beginning of the contract work. If the policy is on a claims-made basis, coverage must extend to a minimum of twelve (12) months beyond completion of contract work. If coverage is cancelled or non-renewed, and not replaced with another claims made policy form with a "retroactive date" prior to the Agreement effective date, the contractor must purchase "extended reporting" coverage for a minimum of twelve (12) months after completion of contract work. Contractor shall maintain a policy limit of not less than $1,000,000 per incident. If the deductible or self-insured retention amount exceeds $100,000, MCE may ask for evidence that contractor has segregated amounts in a special insurance reserve fund or contractor's general insurance reserves are adequate to provide the necessary coverage and MCE may conclusively rely thereon.

Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Agreement. Contractor shall monitor the safety of the job site(s) during the project to comply with all applicable federal, state, and local laws, and to follow safe work practices.

7. NONDISCRIMINATORY EMPLOYMENT:

Contractor and/or any permitted subcontractor, shall not unlawfully discriminate against any individual based on race, color, religion, nationality, sex, sexual orientation, age or condition of disability. Contractor and/or any permitted subcontractor understands and agrees that Contractor and/or any permitted subcontractor is bound by and will comply with the nondiscrimination mandates of all Federal, State and local statutes, regulations and ordinances.

8. SUBCONTRACTING:

The Contractor shall not subcontract nor assign any portion of the work required by this Agreement without prior written approval of MCE except for any subcontract work identified herein. If Contractor hires a subcontractor under this Agreement, Contractor shall require subcontractor to provide and maintain insurance coverage(s) identical to what is required of Contractor under this Agreement and shall require subcontractor to name Contractor as additional insured under this Agreement. It shall be Contractor's responsibility to collect and maintain current evidence of insurance provided by its subcontractors and shall forward to MCE evidence of same.

9. ASSIGNMENT:

The rights, responsibilities and duties under this Agreement are personal to the Contractor and may not be transferred or assigned without the express prior written consent of MCE.

10. RETENTION OF RECORDS AND AUDIT PROVISION:

Contractor and any subcontractors authorized by the terms of this Agreement shall keep and maintain on a current basis full and complete documentation and accounting records, employees' time sheets, and correspondence pertaining to this Agreement. Such records shall include, but not be limited to, documents supporting all income and all expenditures. MCE shall have the right, during regular business hours, to review and audit all records relating to this Agreement during the Contract period and for at least five (5) years from the date of the completion or termination of this Agreement. Any review or audit may be conducted on Contractor's premises or, at MCE's option, Contractor shall provide all records within a maximum of fifteen (15) days upon receipt of written notice from MCE. Contractor shall refund any monies erroneously charged.

11. WORK PRODUCT:

All finished and unfinished reports, plans, studies, documents and other writings prepared by and for Contractor, its officers, employees and agents in the course of implementing this Agreement shall become the sole property of MCE upon payment to Contractor for such work. MCE shall have the exclusive right to use such materials in its sole discretion without further compensation to Contractor or to any other party. Contractor shall, at MCE's expense, provide such reports, plans, studies, documents and writings to MCE or any party MCE may designate, upon written request. Contractor may keep file reference copies of all documents prepared for MCE.

12. TERMINATION:

A. If the Contractor fails to provide in any manner the services required under this Agreement or otherwise fails to comply with the terms of this Agreement or violates any ordinance, regulation or other law which applies to its performance herein, MCE may terminate this Agreement by giving five (5) calendar days written notice to the party involved.
B. The Contractor shall be excused for failure to perform services herein if such services are prevented by acts of God, strikes, labor disputes or other forces over which the Contractor has no control.
C. Either party hereto may terminate this Agreement for any reason by giving thirty (30) calendar days written notice to the other parties. Notice of termination shall be by written notice to the other parties and be sent by registered mail.
D. In the event of termination not the fault of the Contractor, the Contractor shall be paid for services performed to the date of termination in accordance with the terms of this Agreement so long as proof of required insurance is provided for the periods covered in the Agreement or Amendment(s).

13. AMENDMENT:

This Agreement may be amended or modified only by written agreement of all parties.

14. ASSIGNMENT OF PERSONNEL:

The Contractor shall not substitute any personnel for those specifically named in its proposal unless personnel with substantially equal or better qualifications and experience are provided, acceptable to MCE, as is evidenced in writing.

15. JURISDICTION AND VENUE:

This Agreement shall be construed in accordance with the laws of the State of California and the parties hereto agree that venue shall be in Marin County, California.

16. INDEMNIFICATION:

Contractor agrees to indemnify, defend, and hold MCE, its employees, officers, and agents, harmless from any and all liabilities including, but not limited to, litigation costs and attorney's fees arising from any and all claims and losses to anyone who may be injured or damaged by reason of Contractor's negligence, recklessness or willful misconduct in the performance of this Agreement.

17. NO RECOURSE AGAINST CONSTITUENT MEMBERS OF MCE:

MCE is organized as a Joint Powers Authority in accordance with the Joint Exercise of Powers Act of the State of California (Government Code Section 6500, et seq.) pursuant to the Joint Powers Agreement and is a public entity separate from its constituent members. MCE shall solely be responsible for all debts, obligations and liabilities accruing and arising out of this Agreement. Contractor shall have no rights and shall not make any claims, take any actions or assert any remedies against any of MCE's constituent members in connection with this Agreement.

18. COMPLIANCE WITH APPLICABLE LAWS:

The Contractor shall comply with any and all Federal, State and local laws and resolutions (including, but not limited to the County of Marin Nuclear Free Zone, Living Wage Ordinance, and Resolution #2005-97 of the Board of Supervisors prohibiting the off-shoring of professional services involving employee/retiree medical and financial data) affecting services covered by this Agreement.

19. NOTICES

This Agreement shall be managed and administered on MCE's behalf by the Contract Manager named below. All invoices shall be submitted and approved by this Agreement Manager and all notices shall be given to MCE at the following location:

Contract Manager:	Sarah Estes-Smith
MCE Address:	1125 Tamalpais Avenue
	San Rafael, CA 94901
Email Address:	invoices@mcecleanenergy.org
Telephone No.:	(415) 464-6028

Notices shall be given to Contractor at the following address:

Contractor:	Dr. David A. Jordan
Address:	
Email Address:	djordan@sevenhills.org
Telephone No.:	(508) 755-2340 ext. 1301

20. ACKNOWLEGEMENT OF EXHIBITS

☒	***Check applicable Exhibits***	**CONTRACTOR'S INITIALS**
EXHIBIT A.	☒ **Scope of Services**	
EXHIBIT B.	☒ **Fees and Payment**	
EXHIBIT C.	☒ **Insurance Waiver/Reduction**	
EXHIBIT D.	☒ **Proposal**	

IN WITNESS WHEREOF, the parties have executed this Agreement on the date first above written.

APPROVED BY
Marin Clean Energy:

By:_____
CEO
Date:_____

By:_____
Chairperson
Date:_____

CONTRACTOR:

By:_____

Name:_____

Date:_____

MCE COUNSEL REVIEW AND APPROVAL ***(Only required if any of the noted reason(s) applies)***
REASON(S) REVIEW:

☒ **Standard Short Form Content Has Been Modified**
☐ **Optional Review by MCE Counsel at Marin Clean Energy's Request**

MCE Counsel: _____ **Date:**_____

EXHIBIT A
SCOPE OF SERVICES (required)

Contractor will provide the following organizational analysis and strategic planning consulting services, as requested and directed by MCE staff, up to the maximum time/fees allowed under this Agreement:

Phase 1: Environmental/Organizational Analysis

The environmental/organizational analysis phase involves a thorough review of MCE's ***'external'*** and ***'internal'*** environments. Using a healthcare metaphor – this is the "diagnostic workup" of an organization intended to reveal its resources, capabilities, and competencies, and the projected societal/ sector trends in which it must compete. Just as a healthcare practitioner cannot prescribe a plan of treatment without first conducting a comprehensive examination – an organization similarly cannot create a meaningful strategic – nor tactical – plan without first having a full and complete understanding of its strengths, weaknesses, opportunities, threats, and environmental trends. This process will involve interviewing key organizational stakeholders including the Board of Directors, leadership, and selected key *'publics'* – including MCE staff and members of the regulatory or other bodies MCE leadership would like to access.

Phase 2: Strategy Formulation

Strategy formulation considers the varied alternatives open to the MCE. These include adaptive strategies (i.e. expansion, contraction, or stabilization), market strategies (i.e. purchasing, cooperation, or development), positioning strategies (i.e. market-wide or market segment), and implementation strategies (i.e. functional and organization-wide strategies). It is in this second phase – strategy formulation – where thoughtful tactical and strategic planning is created and articulated.

Phase 3: Strategy Implementation

Strategy implementation involves the activities and choices required for the execution of MCE's tactical and strategic plans. In this phase, strategies and policies are put into action through the development of programs, budgets, and procedures. To begin the implementation process, strategy makers consider 3 questions:

- Who are the people who will carry out the tactical / strategic plan?
- What must be done?
- How are they going to do what is needed?

We will work with the Board and leadership of MCE to ensure that the formal organizational analysis and resultant strategic planning document clearly responds to each of these questions prior to strategy implementation.

Phase 4: Strategy Evaluation & Control

Through the evaluation and control process, MCE activities and performance are monitored so that actual performance can be compared with desired outcome benchmarks. This process provides the feedback necessary for the Board and leadership to evaluate the results of the strategic plan and, as needed, take corrective action.

The scope of services includes the following Deliverables:

1. A completed Organizational Analysis of the MCE which will involve up to thirty personal (30) interviews; including members of the Board of Directors, Leadership, Staff, and other key 'publics' as might be identified. The analysis will involve a review of the MCE's external environment and internal environment. A SWOT analysis, Trend analysis, and Competitors analysis will be integral components of the Organizational Analysis. The organizational analysis will also include an additional online survey in which ALL employees of MCE will be asked to respond (anonymously) to questions relating to their perceptions of suggested goals for the subsequent 2 year cycle, a general satisfaction survey, and related inquiry.

2. A presentation of the findings associated with the Organizational Analysis coupled with a half-day 'retreat' with the MCE leadership to discuss and consider the findings and prepare 'Action Steps' from which to proceed forward.

3. Drafting of an initial Strategic Plan for the Marin Clean Energy for review by the Board and Leadership.

4. A completed Strategic Plan document with organizational goals, enacting objectives for each goal, timeframe and responsibility assignments, and an assessment as to the organizational resources required to complete each of the prescribed goals (e.g. Financial requirements, marketing needs, human resources, IT, etc.). A PowerPoint presentation of the agreed upon tactical goals will be a final deliverable to Marin Clean Energy.

EXHIBIT B
FEES AND PAYMENT SCHEDULE

For services provided under this agreement, MCE shall pay the Contractor in accordance with the following payment fees/schedule:

50% due upon completion of Phase 1
50% upon delivery of Deliverable 4

Travel, lodging and other expenses are included in this proposal and will not be billed separately.

In no event shall the total cost to MCE for the service provided herein exceed the maximum sum of **$34,000** for the term of the agreement.

EXHIBIT C
INSURANCE REDUCTION/WAIVER (if applicable)

CONTRACTOR: D.A. JORDAN & ASSOCIATES

CONTRACT TITLE: First Agreement By and Between MCE and D.A. JORDAN & ASSOCIATES

This statement shall accompany all requests for a reduction/waiver of insurance requirements. Please check the box if a waiver is requested or fill in the reduced coverage(s) where indicated below:

	Check Where Applicable	***Requested Limit Amount***	***MCE Use Only***
General Liability Insurance	☒	$	
Automobile Liability Insurance	☒	$	
Workers' Compensation Insurance	☒		
Professional Liability Deductible	☒	$	

Please set forth the reasons for the requested reductions or waiver.

General & Professional Liability – Waived due to limited scope of services.
Workers' Compensation – Waived; contractor is a sole proprietor.
Auto Liability – Coverage amount decreased per Contractor request.

Contract Manager Signature: _____

Date: _____

Telephone: _____

Approved by: _____

Date: _____

EXHIBIT D
PROPOSAL

d.a .jordan & associates
Dr. David A. Jordan DHA, MPA
Organizational Development & Strategic Planning
djordan@sevenhills.org

To: Ms. Sarah Estes-Smith
Internal Operations Coordinator
Marin Clean Energy (MCE)
From: Dr. David A. Jordan
Date: September 23, 2015
Re: Organizational Analysis & Strategic Planning Proposal

For the organizational analysis initiative proposed for the ***Marin Clean Energy (MCE),*** it is recommended that a formal strategic management methodology be employed. Broadly stated, the construct of strategic management involves a descriptive analysis of an organization's internal and external environments as a means toward guiding its future strategic trajectory and the corresponding utilization of its resources – human or otherwise. More simply put, strategic management is a "matching process" in which the variables of strategy, capability, and environment are matched as the organization seeks to manage change. A more formal definition is:

> ***The term strategic management refers to the managerial process of forming a strategic vision, setting goals and objectives, crafting the strategy, implementing and executing the strategy, and then over time, initiating whatever corrective adjustments in the vision, goals/objectives, strategy, and execution as deemed appropriate.***
>
> (Thompson & Strickland, 2001)

For the purposes of this assignment, we will attempt to orchestrate a fit between the organization's ***external environment*** including it's current / future opportunities and threats; a review of similar organizations (competitors) ; and a review of the external trends which may impact the MCE in the near future (i.e. political, regulatory, economic, technological, social/cultural, and competitive forces). An assessment of the Marin Clean Energy's ***internal environment*** including it's perceived strengths and weaknesses and a review of the existing operational subsystems (i.e. marketing, finances, technology, etc.) will also be considered. The focus of this assignment will be to recommend certain ***"strategic initiatives"*** intended to support the efforts of the organizations longer term vision; ***that is, what best actions might the Marin Clean Energy undertake over the next 24 month cycle as a means toward positioning itself and achieving heightened competitive advantage in the future. This analysis will also consider and make recommendations concerning operational efficiencies.***

The Strategic Management Planning Model

It may be useful to think of the organizational analysis process proposed for the Marin Clean Energy as consisting of four (4) distinct 'phases':

1. **Environmental/Organizational Analysis:** The environmental/organizational analysis phase involves a thorough review of MCE's ***'external'*** and ***'internal'*** environments. Using a healthcare metaphor – this is the "diagnostic workup" of an organization intended to reveal its resources, capabilities, and competencies, and the projected societal/ sector trends in which it must compete. Just as a healthcare practitioner cannot prescribe a plan of treatment without first conducting a

comprehensive examination – an organization similarly cannot create a meaningful strategic – nor tactical - plan without first having a full and complete understanding of its strengths, weaknesses, opportunities, threats, and environmental trends. This process will involve interviewing key organizational stakeholders including the Board of Directors, leadership, and selected key *'publics'* – including MCE staff and members of the regulatory or other bodies MCE leadership would like to access.

2. **Strategy Formulation:** Strategy formulation considers the varied alternatives open to the MCE. These include adaptive strategies (i.e. expansion, contraction, or stabilization) , market strategies (i.e. purchasing, cooperation, or development), positioning strategies (i.e. market-wide or market segment), and implementation strategies (i.e. functional and organization-wide strategies). It is in this second phase – strategy formulation – where thoughtful tactical and strategic planning is created and articulated.

3. **Strategy Implementation:** Strategy implementation involves the activities and choices required for the execution of MCE's tactical and strategic plans. In this phase, strategies and policies are put into action through the development of programs, budgets, and procedures. To begin the implementation process, strategy makers consider 3 questions:

    - Who are the people who will carry out the tactical / strategic plan?
    - What must be done?
    - How are they going to do what is needed?

    We will work with the Board and leadership of MCE to ensure that the formal organizational analysis and resultant strategic planning document clearly responds to each of these questions prior to strategy implementation.

4. **Strategy Evaluation & Control:** Through the evaluation and control process, MCE activities and performance are monitored so that actual performance can be compared with desired outcome benchmarks. This process provides the feedback necessary for the Board and leadership to evaluate the results of the strategic plan and, as needed, take corrective action.

Deliverables to Marin Clean Energy (MCE)

This proposal includes the following deliverables:

5. A completed Organizational Analysis of the MCE which will involve up to thirty personal (30) interviews; including members of the Board of Directors, Leadership, Staff, and other key 'publics' as might be identified. The analysis will involve a review of the MCE's external environment and internal environment. A SWOT analysis, Trend analysis, and Competitors analysis will be integral components of the Organizational Analysis. The organizational analysis will also include an additional online survey in which ALL employees of MCE will be asked to respond (anonymously) to questions relating to their perceptions of suggested goals for the subsequent 2 year cycle, a general satisfaction survey, and related inquiry.

6. A presentation of the findings associated with the Organizational Analysis coupled with a half-day 'retreat' with the MCE leadership to discuss and consider the findings and prepare 'Action Steps' from which to proceed forward.

7. Drafting of an initial Strategic Plan for the Marin Clean Energy for review by the Board and Leadership.

8. A completed Strategic Plan document with organizational goals, enacting objectives for each goal, timeframe and responsibility assignments, and an assessment as to the organizational resources required to complete each of the prescribed goals (e.g. Financial requirements, marketing needs, human resources, IT, etc.). A PowerPoint presentation of the agreed upon tactical goals will be a final deliverable to Marin Clean Energy.

Fees for Consultation

For the above services, the consulting fee would be $34,000 (Thirty Four Thousand) payable as follows: 50% at the completion of the Organizational Analysis (Phase 1 as noted above) and 50% at delivery of the final Strategic Plan document with identified 2 year Goals, Objectives and Implementation Strategies. Travel, lodging, and other expenses are included in this proposal. This assignment will entail spending between 7 - 10 days on site at MCE headquarters in California.
Projected Start Date: October 17, 2015
Anticipated Completion Date: January 31, 2016

Respectfully Submitted

David A. Jordan, DHA, MPA

Acceptance / Authorization To Proceed

The above scope and terms are accepted by Marin Clean Energy and confirmed by the signature below:

On Behalf of Marin Clean Energy,

_____ _____

Authorized Signature / Title Date

Marin Clean Energy

Richmond Solar PV Project

Draft Environmental Impact Report SCH #2015042040

August 2015

rincon

Environmental Scientists Planners Engineers

DRAFT
ENVIRONMENTAL IMPACT REPORT

RICHMOND SOLAR PV PROJECT
SCH #2015042040

Prepared by:

Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901
Contact: Greg Brehm, Director of Power Resources
(415) 464-6037

Prepared with the assistance of:

Rincon Consultants, Inc.
180 Grand Avenue, Suite 400
Oakland, California 94612
(510) 834-4455

August 2015

This report prepared on 50% recycled paper with 50% post-consumer content.

RICHMOND SOLAR PV PROJECT

Draft
Environmental Impact Report

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EXECUTIVE SUMMARY

This section summarizes the characteristics of the proposed project as well as the environmental impacts, mitigation measures, and residual impacts associated with implementation of the proposed project.

PROJECT SYNOPSIS

Project Proponent

Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901

Project Description

The proposed project would involve site preparation, installation and operation of a 10.5 megawatt (MW) solar photovoltaic (PV) system at the project site. The installation would include approximately 80,000 thin-film, non-reflective solar panels, which, in combination with 11 utility-scale inverters, would convert sunlight into electricity. This would be fed directly into the Pacific Gas & Electric (PG&E) utility grid from a point adjacent to the site.

The project would be built in two phases. Phase I includes the installation of a 2 MW non-penetrating, ballasted, fixed-tilt PV array on the southern portion of the landfill area (approximately 13 acres of the 40 acre landfill). The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows. It should be noted that the Chevron Modernization EIR evaluated a solar project as a component of the overall project. This EIR provides more detail related to that original project (Phase I of the proposed project analyzed in this EIR) and provides project- and site-specific analysis for this component along with Phase 2. Each of the two phases of the proposed project have independent utility interconnections and each phase is independent of one another financially and physically. Thus, either phase could be developed separately.

Phase 2 of the proposed project includes the installation of:

1. 3.5 MW of single-axis tracking PV arrays on the 20-acre filled and compacted fertilizer pond. These arrays would extend from at least 30 inches above grade to a maximum of height of 14 feet in their highest position, would be aligned in a north/south orientation, spaced approximately 11 feet apart (east to west), and sloped at zero degrees; and

2. 5 MW of non-penetrating, ballasted, fixed-tilt PV arrays on the northern portion of the landfill area (27 acres of the 40-acre landfill). The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows.

All inverters and transformers would be mounted on concrete pads. The pads on the capped landfill would be placed above ground so as to not penetrate the landfill cap. Multiple pad-mounted transformers would be connected by above-grade conduits to switching substations

and pole mounted metering connected to existing 12.47 kilovolt PG&E distribution lines. The electrical equipment would pose no electrical shock risk and would be safe for human and wildlife contact, and all electrical conduits would be rated for outdoor use.

Site access during construction and operation would be along existing paved roadways. All deliveries and materials would primarily enter by the existing Hensley Street gate onto paved access roads to the project site. Larger vehicles may be required to access the site through existing paved roads and security gates within the Chevron refinery to the west of the project site. Construction staging and parking would occur adjacent to the northwest of the landfill.

Construction of Phase 1 would take approximately 12 months to complete and Phase 2 construction of would begin following the start of construction for Phase I and would take approximately 15 months to complete. Total construction from start to finish would therefore take approximately 18 months. The construction workforce is expected to peak at 100 personnel, and would consist of pre-qualified laborers, electricians, craftsmen, supervisory, support and management staff. Construction would generally occur between 7:00 AM and 5:00 PM on weekdays, though additional work hours and days may be necessary to make up for unexpected delays or testing.

Construction and installation would require minimal vegetation removal and all disturbed areas would be re-vegetated with native grasses and wildflowers. Site preparation would require placement of up to 500 cubic yards of fill on the landfill and removal and redistribution of a temporary berm on the fertilizer pond area of approximately 3,400 cubic yards of soil among various low spots on this portion of the project site. Grading would be balanced onsite; no export or import of cut or fill material is proposed. Construction sites would be stabilized to minimize wind and storm water erosion and watering and other approved measures would be used to control dust onsite. Figure 2-10 shows the overall grading plan for the proposed project. At the end of the project's useful life (anticipated being 30 years or more), the proposed solar facility and associated infrastructure may be decommissioned.

ALTERNATIVES

Five alternatives to the proposed project were chosen for analysis as follows:

- *Alternative 1: No Project*
- *Alternative 2: Fixed-Only Solar PV Project - No Trackers*
- *Alternative 3: Alternate Points of Interconnection (POC)*

Under the No Project Alternative, construction and operation of the project would not occur. The baseline environmental conditions for the No Project Alternative are the same as for the proposed project. The current uses of the proposed project site would be retained. Other uses of the land (e.g., for Chevron operations) also could occur, consistent with existing zoning regulations for the site. However, for the purpose of this analysis, it is assumed that no development would occur.

Similar to the proposed project, this alternative would involve construction and operation of an approximately 10.5 MW PV system at the approximately 60-acre project site, which, in

combination with approximately 11 utility scale inverters, would convert sunlight into electricity. However, under this alternative there would be only one type of solar panel onsite, the fixed ballast type. There would be no tracker type solar panels as part of the solar array. Thus this alternative would have the same amount of overall acreage on both the landfill and fertilizer pond sites but only fixed ballasts solar panels would be used, which would reduce the impacts related to ground disturbance on the site associated with the project as proposed.

This alternative would only affect Phase 2 of the project and would include alternate points of interconnection that would require different pole line distribution than the proposed project. Under this alternative, the same overall amount of acreage would be used for solar PV arrays in the same configuration as the proposed project, utilizing approximately 80,000 thin-film, non-reflective solar panels on the landfill and fertilizer pond sites with the same breakdown of fixed and tracking arrays. However, under this alternative the points of interconnection (POC) adjacent to the site would be different than the proposed project, which would be fed directly into the Pacific Gas & Electric (PG&E) utility grid by coupling into existing power lines running along Castro Street and connecting south at PG&E distribution circuit 1120 (shown on Figures 2-6 and 2-7) from a point along Castro Street approximately 800 feet south of the project site. Under the Alternative POC Alternative, the POC would still be adjacent to the project site, but would require upgrades according to one of two options:

a. Alternate POC #1 - PG&E would extend circuit 1120 approximately 800 feet to the north along the existing PG&E overhead lines and then connect directly from the site to the original connection point.
b. Alternate POC #2 – The project would use the existing Chevron pole-line exiting the southeast leased boundary to continue east across Castro Street to adjacent Chevron-owned property and then continue south along existing PG&E right of way (ROW) to an existing PG&E pole location that is directly east of the original circuit 1120 Point Of Interconnection.

Refer to Section 6.0, *Alternatives,* for the complete alternatives analysis.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table ES-1 includes a brief description of the environmental issues relative to the proposed project, the identified environmental impacts, proposed mitigation measures, and residual impacts. Impacts are categorized by significance. *Significant and unavoidable* adverse impacts (Class I) require a statement of overriding considerations to be issued per Section 15093 of the *State CEQA Guidelines* if the project is approved. *Significant but mitigable* impacts (Class II) are adverse impacts that can be feasibly mitigated to less than significant levels and which require findings to be made under Section 15091 of the *State CEQA Guidelines*. *Less than significant* impacts (Class III) would not exceed significance thresholds and therefore would not require mitigation.

Table ES-1
Summary of Significant Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measure	Residual Impact
BIOLOGICAL RESOURCES		
Impact BIO-1 Of five natural communities present within the vicinity of the project site, four of these, along with the nearby riparian habitat, would not be adversely affected by the proposed project. However, project construction could potentially impact the "sensitive" purple needlegrass, natural community on the site. Potential impacts on this sensitive natural community would be considered Class II – significant but mitigatable.	**BIO- 1** A highly visible barrier fence or flagging shall be installed around the identified Valley Needlegrass Grassland community to prevent equipment and employee movement through the community. This fence or flagging shall be installed prior to the onset of grading or construction, maintained throughout project activities, and removed following project completion.	Less than significant with mitigation implemented.
Impact BIO-2 The project site does not contain suitable habitat for special-status plant species. However, the project site contains habitat that could support burrowing owl and/or other nesting birds protected under state and federal law. Construction of the proposed project could result in direct or indirect effects to burrowing owl and nesting bird species that could be present on or near the site during construction. Impacts on sensitive species would be considered Class II – significant but mitigable.	**BIO– 2(a) Avoid Nesting Bird Season.** Direct disturbance (clearing/grading/vegetation removal) to nesting habitat shall be conducted between September 16 and January 31, outside of the nesting bird breeding season, to the greatest extent possible. No preconstruction nesting bird surveys would be required for construction occurring during the non-breeding season. Removal of potential nesting habitat during the non-breeding season would prevent mated pairs from nesting in proposed disturbance areas. **BIO-2(b)Pre-Construction Nesting Bird Surveys.** If direct disturbance (clearing/grading/vegetation removal) to nesting habitat is unavoidable during the bird breeding season (February 1 to September 15), a qualified biologist shall conduct pre-construction surveys for nesting birds and general avian activity in all areas within 500 feet of proposed disturbance areas, where accessible, prior to any site disturbance (i.e., mobilization, staging, grading, or construction). If active nests are found, they shall be protected with a minimum 100-foot no-work buffer for songbirds and 500-foot buffer for raptors. These buffers could be adjusted according to existing noise, topography, or disturbance conditions. Buffer zones would be designated in the field in various ways, including flagging, fencing, and/or signage. Surveys shall be completed no more than 14 days prior to ground disturbance and vegetation removal. If buffers and follow-up monitoring are required, the qualified biologist shall submit a monthly monitoring report identifying active nests, monitoring results, and condition of buffer zones. Reports can be combined with other reporting requirements where appropriate. **BIO-2(c) Pre-Construction Burrowing Owl Surveys.** A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl	Less than significant with mitigation implemented.

Table ES-1
Summary of Significant Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measure	Residual Impact
	survey experience) shall conduct pre-construction clearance surveys prior to ground disturbance activities (e.g., vegetation clearance, grading, tilling) within all suitable habitat to confirm the presence/absence of burrowing owls (maybe conducted concurrently with BIO-1(b)). The survey methodology shall be consistent with the recommended methods outlined in the 2012 CDFW Staff Report on Burrowing Owl Mitigation. Clearance surveys shall be conducted within 14 days prior to construction and ground disturbance activities. If no burrowing owls are observed, no further actions are required. If burrowing owls are detected on-site, no ground-disturbing activities shall be permitted within a buffer of no fewer than 100 meters (330 feet) from an occupied burrow during the breeding season (February 1 to August 31), unless otherwise authorized by CDFW. During the non-breeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow. Depending on the level of disturbance, a smaller buffer may be established in consultation with CDFW. If avoidance of active burrows is not feasible during the non-breeding season, then, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping, a qualified biologist shall implement a passive relocation program in accordance with the CDFW 2012 Staff Report on Burrowing Owl. If passive relocation is required, a qualified biologist shall prepare a Burrowing Owl Exclusion and Mitigation Plan in accordance with CDFWs 2012 Staff Report on Burrowing Owl Mitigation and for review by CDFW prior to passive relocation activities. The Plan shall include all necessary measures to minimize impacts to burrowing owls during passive relocation, including all necessary monitoring of owls and burrows during passive relocation efforts. Relocation of owls can only occur during the non-breeding season.	
Impact BIO-3 Project related construction and operation would occur outside any potentially jurisdictional wetland and "other waters of the U.S." or waters for the State within the project area and no direct impacts to these waters would occur. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared according to NPDES	**BIO- 3 Stormwater Control Measures.** The following best management practices (BMPs) shall be implemented throughout construction activities and/or as part of project design. • The Facility shall provide environmental awareness training for all construction personnel to address potential impacts to wetlands and waters of the US and State. • Bright-colored fencing and signage shall	Less than significant with mitigation implemented.

Table ES-1
Summary of Significant Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measure	Residual Impact
requirements prior to construction. Potential indirect impacts to ambient water quality from ground disturbance related to construction would be considered Class II – significant but mitigatable.	identify and restrict construction within environmentally sensitive areas. • A construction monitor/environmental inspector shall confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. • Any and all necessary fence repair and/or reinforcements shall be completed immediately. • Temporary perimeter silt fencing shall be installed where storm water runoff and non-storm water discharges could flow into surrounding marshes. • Placement of exclusion fencing 5–10 feet from the perimeter of the coastal brackish marsh boundary or on the edge of the temporary disturbance area when this distance is greater. • Temporary straw wattles, sand bags, or water velocity dissipaters shall be installed around concrete drainage channels to prevent sediment from entering channels and storm drains. • Ground disturbance and vegetation grubbing shall be minimized and limited to the area required to complete project activities. • Bare ground exposed or inactive for more than 14 days shall be stabilized or re-vegetated to prevent erosion. Following project completion all areas of bare ground shall be stabilized or re-vegetated prior to termination of installation activities. • Entrances and exits onto the landfill and evaporation pond sites shall be stabilized to prevent sediments from being tracked off site. • Staging or storing of equipment and materials shall occur onsite or on existing paved surfaces and shall be covered or contained within appropriate secondary containment to prevent pollutants from running off site or onto the ground. • BMPs shall be installed prior to initiation to work and all temporary BMPs shall be removed following project completion.	
HAZARDS AND HAZARDOUS MATERIALS		
Impact HAZ-1 The majority of project site disturbance would occur in an area historically used as a landfill and fertilizer pond. Impacts related to exposure to chemicals remaining in on-site soils would be Class II – significant but Mitigable.	**HAZ-1(a)** Prior to issuance of building permits, the applicant shall submit for City of Richmond review the design of the 10.5MW facility, and sufficient information about construction and operation parameters as are determined by City and/or RWQCB to be needed to assure that the solar project would not reduce the effectiveness of the remediation measures currently implemented in the solar site area.	Less than significant with mitigation implemented.

Table ES-1
Summary of Significant Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measure	Residual Impact
	HAZ-1(b) Prior to issuance of building permits, the landowner (Chevron) shall submit for RWQCB review the design of the 10.5MW facility, and sufficient information about construction and operation parameters as are determined by City and/or RWQCB to be needed to assure that the solar project would not reduce the effectiveness of the remediation measures currently implemented in the solar site area.	
Impact HAZ-2 Construction, operation, and decommissioning activities would involve the use, storage, and/or transport of hazardous materials that could potentially create a safety hazard to the public or environment. The potential hazards associated with the use, transport and/or storage of hazardous materials would be Class III, less than significant.	None required.	Less than significant.
Impact HAZ-3 Repowering or decommissioning of the proposed project could result in the improper disposal of hazardous waste, including used PV solar modules. Impacts related to the disposal of decommissioned PV solar modules would be considered Class II – significant but mitigable.	**HAZ-3 Disposal of PV Modules and Support Structures.** Prior to construction permit issuance, the system operator shall prepare a recycling or disposal plan for PV modules and support structures for MCE review and approval, in order that project structures not pose a risk to human health or the environment after project repowering and/or decommissioning. The plan shall specify how these project components shall be disposed of in a manner that will not pose a risk to human health or the environment, and the costs of such disposal.	Less than significant with mitigation implemented.
Impact HAZ-4 The proposed project would not conflict with the Chevron Refinery's Emergency Response Program because Chevron is required to update its existing emergency and evacuation plans pursuant to Mitigation Measure Haz-2 of the Chevron Richmond Refinery Modernization Project EIR. Impact would be Class III – *less than significant.*	None required.	Less than significant.
HYDROLOGY AND WATER QUALITY		
Impact HYD-1 The proposed project could degrade water quality due to erosion and sedimentation associated with temporary ground-disturbing activities. Compliance with existing federal and state requirements would ensure that impacts remain Class III, less than significant.	None required.	Less than significant.
Impact HYD-2 Construction or operation of the project could result in the accidental release of	**HYD-2 Maintain Vehicles and Equipment.** All vehicles and equipment, including hydraulic hoses, shall be maintained in good working order	Less than significant with mitigation implemented.

Table ES-1
Summary of Significant Environmental Impacts, Mitigation Measures and Residual Impacts

Impact	Mitigation Measure	Residual Impact
hazardous materials that could degrade water quality. Impacts would be considered Class II – significant but mitigable.	to minimize leaks that could contact the ground. A vehicle and equipment maintenance log shall be updated and provided by the project proponent to Marin Clean Energy on a monthly basis for the duration of project construction.	
Impact HYD-3 The proposed project would alter the existing drainage pattern of the project area and would introduce impervious surfaces to the former fertilizer pond area, which is currently porous and allows infiltration. However, the project would not increase runoff, and therefore would not result in flooding or increased erosion downstream. Impacts would be considered Class III – *less than significant*.	The proposed project would be required to comply with the NPDES program, including through preparation of a SWPPP and implementation of associated BMPs, as outlined in Impact HYD-1. Compliance with existing regulations would reduce impacts related to increased erosion downstream to a less than significant level. No mitigation would be required.	Less than significant.

1.0 INTRODUCTION

Marin Clean Energy (MCE) prepared this Environmental Impact Report (EIR) to evaluate environmental impacts associated with the proposed MCE Richmond Solar Photovoltaic (PV) Project (proposed project) in the in the City of Richmond, in Contra Costa County, California. MCE is a Joint Powers Authority governed by a seventeen-member Board of Directors representing each of the participating jurisdictions, which include the City of Belvedere, Town of Corte Madera, Town of Fairfax, City of Larkspur, City of Mill Valley, City of Novato, City of Richmond, Town of Ross, Town of San Anselmo, City of San Pablo, City of Benicia, City of El Cerrito, City of San Rafael, City of Sausalito, Town of Tiburon, unincorporated Napa County and the County of Marin.

MCE is the public agency with the principal responsibility for approving the project, and as such is the Lead Agency for this project under the California Environmental Quality Act of 1970 (CEQA) as defined in CEQA Guidelines Section 15367. CEQA requires the Lead Agency to consider the information contained in the EIR prior to taking any discretionary action. This EIR serves as an informational document for consideration by MCE and other permitting agencies with potential jurisdiction over all or part of the project during their respective processing of permits.

MCE has determined that the proposed project would have a potentially significant impact on the environment. As a result, this EIR was prepared in accordance with CEQA, as amended (Public Resources Code [PRC] Section 21000, et seq.), and the *State CEQA Guidelines* for Implementation of CEQA (California Code of Regulations [CCR], Title 14, Section 15000 et seq.).

1.1 OVERVIEW OF THE PROPOSED PROJECT

The project site is due west of the intersection of Castro and West Hensley Streets in the City of Richmond, in Contra Costa County, California on three separate assessor parcels (561-100-038-0, 561-100-034-9, and 561-100-037-2). Access would be from the existing Hensley Street gate to the property. MCE has an option to lease this 60-acre site from the Chevron Products Company for solar energy development. Approximately 40 of these acres is a capped landfill, while the remaining 20 acres contain compacted fertilizer.

The proposed project would include a 10.5 mega watt (MW) PV system that would deploy approximately 80,000 thin-film, non-reflective solar panels, which, in combination with 11 utility scale inverters, would convert sunlight into electricity, which would be fed directly into the Pacific Gas & Electric (PG&E) utility grid from a point adjacent to the site. The project would be a combination of non-penetrating ballasted fixed tilt arrays (maximum height of approximately 6 feet) and single axis tracking ground mount arrays (maximum of height of 14 feet in highest position). Multiple transformers would be connected via aboveground lines to adjacent switching substations. Additional project details are provided in Section 2.0, *Project Description*.

1.2 PURPOSE AND INTENDED USES OF THIS EIR

This EIR was prepared to evaluate environmental impacts that may result from implementation of the proposed project. As the Lead Agency, MCE requested the preparation of this EIR, and

will approve a Final EIR that incorporates responses to comments on the EIR. The MCE Board of Directors must review and certify the EIR prior to approving the project.

MCE has the authority to take discretionary actions relating to development of the proposed project and may conditionally approve or deny the project. As stated previously, this EIR is serves as an informational document for the consideration by the MCE Board of Directors during review of the proposed project. This EIR evaluates and mitigates the potential impacts associated with the proposed project. The EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of past, present, and reasonably anticipated future projects.

This EIR will serve as a Project EIR pursuant to the Guidelines for the California Environmental Quality Act (State CEQA Guidelines) (CCR Title 14, Chapter 3, Sections 15000-15387), Sections 15161 and 15168(a)(2), respectively. According to Section 15161 of the State CEQA Guidelines, a Project EIR is appropriate for specific development projects in which information is available for all phases of the project, including planning, construction, and operation. This EIR is a focused EIR, in that it concentrates on the potentially significant impacts of the project on three environmental issue areas: biological resources, hazards and hazardous materials, and hydrology and water quality. This Focused EIR references the Initial Study prepared for the project for an analysis of the other environmental topics on the CEQA *Guidelines* environmental checklist; these topics are not discussed in this Focused EIR because potentially significant impacts in those issue areas were not identified in the Initial Study (see Appendix A).

CEQA requires the Lead Agency to consider the information contained in the EIR prior to taking any discretionary action. This EIR provides information to the Lead Agency and other public agencies, the general public, and decision makers regarding the potential environmental impacts from the construction and operation of the proposed project. The purpose of the public review of the EIR is to evaluate the adequacy of the environmental analysis in terms of compliance with CEQA. Section 15151 of the *State CEQA Guidelines* states the following regarding standards from which adequacy is judged:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information that enables them to make a decision that intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have not looked for perfection but for adequacy, completeness, and a good faith effort at full disclosure.*

Under CEQA, "The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the proposed project, and to indicate the manner in which those significant effects can be mitigated or avoided" (PRC Section 21002.1[a]). An EIR is the most comprehensive form of environmental documentation identified in CEQA and the *State CEQA Guidelines* and provides the information needed to assess the environmental consequences of a proposed project. EIRs are intended to provide an objective, factually supported, full-disclosure analysis of the environmental consequences associated with a proposed project that has the potential to result in significant, adverse environmental impacts.

1.3 PURPOSE AND NEED FOR THE PROPOSED PROJECT

California is committed to the reduction of greenhouse gases through increases in renewable energy generation and reduction in the use of fossil fuels (coal and natural gas). Assembly Bill 32, the California Global Warming Solutions Act of 2006, created a program to reduce greenhouse gas emissions to 1990 levels by the year 2020. In addition, Senate Bill X 1-2, the California Renewable Energy Resources Act of 2011, requires all California utilities to procure 33 percent of their electricity from renewable sources by 2020, with intermediate targets of 20 percent by the end of 2013, and 25 percent by end of 2016.

Section 15124 of the *State CEQA Guidelines* requires that a clearly written statement of objectives be presented in an EIR to help lead agencies develop a reasonable range of alternatives and to aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. Project objectives and a list of siting criteria for the proposed project are discussed in Section 2.0, *Project Description,* of this EIR.

1.4 SCOPE AND CONTENT

This EIR focuses on those issues determined by input gathered during the NOP and scoping process, consultation with MCE staff, and from the Initial Study Checklist to be potentially significant, including:

- *Biological Resources*
- *Hazards and Hazardous Materials*
- *Hydrology/Water Quality*

The EIR identifies potentially significant environmental impacts related to the issues above, including site-specific and cumulative effects of the project in accordance with the provisions set forth in the *State CEQA Guidelines*. In addition, the EIR recommends feasible mitigation measures, where possible, that would reduce or eliminate adverse environmental effects.

In preparing the EIR, use was made of pertinent policies and guidelines, existing EIRs and background documents prepared in the region. A full reference list is contained in Section 7.0, *References and Preparers*, of this EIR.

Section 6.0, *Alternatives,* of the EIR was prepared in accordance with Section 15126(d) of the *State CEQA Guidelines* and focuses on alternatives that are capable of eliminating or reducing significant adverse effects associated with the project while feasibly attaining most of the basic objectives of the project. In addition, the EIR identifies an "environmentally superior" alternative from the range of alternatives assessed below, including:

- *Alternative 1: No Project*
- *Alternative 2: Fixed-Only Solar PV Project - No Trackers*
- *Alternative 3: Alternate Points of Interconnection (POC)*

1.5 LEAD, RESPONSIBLE AND TRUSTEE AGENCIES

The *State CEQA Guidelines* define "Lead," "Responsible" and "Trustee" agencies. Marin Clean Energy is the Lead Agency for the project because it has the principal responsibility for approving the project.

A "Responsible Agency" refers to public agencies other than the Lead Agency that has discretionary approval over the project. The California Public Utilities Commission (CPUC) has discretionary approval over power sales contracts and PG&E's switching station. The City of Richmond has discretionary authority over the required Design Review Permit.

A "Trustee Agency" refers to a state agency having jurisdiction by law over natural resources affected by a project. The California Department of Fish and Wildlife (CDFW) has jurisdiction over biological resources, including drainages that may be impacted by project development. The CDFW is therefore a Trustee Agency with permit authority for the project.

1.6 ENVIRONMENTAL REVIEW PROCESS

The environmental impact review process, as required under CEQA, is outlined below. The steps are presented in sequential order.

1. **Notice of Preparation (NOP) Distributed.** Immediately after deciding that an EIR is required, the lead agency must file a NOP soliciting input on the EIR scope to "Responsible," "Trustee," and involved federal agencies; to the State Clearinghouse, if one or more state agencies is a responsible or trustee agency; and to parties previously requesting notice in writing (*CEQA Guidelines* Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk's office for 30 days. A scoping meeting to solicit public input on the issues to be assessed in the EIR is not required, but may be conducted by the lead agency. The review period for the Richmond Solar PV Project NOP ended on May 11, 2015.

2. **Draft Environmental Impact Report (DEIR) Prepared**. The DEIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) discussion of alternatives; g) mitigation measures; and h) discussion of irreversible changes.

3. **Public Notice and Review**. A lead agency must prepare a Public Notice of Availability of an EIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092). The lead agency must send a copy of its Notice to anyone requesting it (*State CEQA Guidelines* Section 15087). Additionally, public notice of DEIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the DEIR from responsible and trustee agencies, and adjacent cities and counties (Public Resources Code Sections 21104 and 21253). When a DEIR is sent to the State Clearinghouse for review, the public review

period must be 45 days unless a shorter period is approved by the Clearinghouse (Public Resources Code 21091). Distribution of the DEIR may be required through the State Clearinghouse (*State CEQA Guidelines* Section 15305).

4. **Notice of Completion.** A lead agency must file a Notice of Completion with the State Clearinghouse as soon as it completes a DEIR.

5. **Final EIR (FEIR).** A FEIR must include: a) the DEIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.

6. **Certification of FEIR**. The lead agency shall certify: a) the FEIR has been completed in compliance with CEQA; b) the FEIR was presented to the decision-making body of the lead agency; and c) the decision-making body reviewed and considered the information in the FEIR prior to approving a project (*CEQA Guidelines* Section 15090).

7. **Lead Agency Project Decision**. A lead agency may: a) disapprove a project because of its significant environmental effects; b) require changes to a project to reduce or avoid significant environmental effects; or c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*CEQA Guidelines* Sections 15042 and 15043).

8. **Findings/Statement of Overriding Considerations**. For each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible *(CEQA Guidelines* Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.

9. **Mitigation Monitoring/Reporting Program.** When an agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.

10. **Notice of Determination.** An agency must file a Notice of Determination after deciding to approve a project for which an EIR is prepared (*State CEQA Guidelines* Section 15094). A local agency must file the Notice with the County Clerk. The Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30-day statute of limitations on CEQA challenges (Public Resources Code Section 21167[c]).

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2.0 PROJECT DESCRIPTION

The proposed project is the Marin Clean Energy Richmond Solar Photovoltaic (PV) Project (proposed project). This section describes the proposed project, including information about the project sponsor/lead agency, project location, major characteristics, and a list of discretionary approvals needed to implement the project.

2.1 PROJECT SPONSOR/LEAD AGENCY

Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901

2.2 PROJECT LOCATION

The proposed project is due west of the intersection of Castro and West Hensley Streets on three separate assessor parcels (561-100-038-0, 561-100-034-9, and 561-100-037-2) in the City of Richmond, in Contra Costa County, California. MCE has an option to lease this 60-acre site from the Chevron Products Company for solar energy development. Approximately 40 of these acres are a capped landfill, while the remaining 20 acres consist of filled and compacted fertilizer ponds. The site is a part of the Chevron Richmond Refinery property. Figure 2-1 shows the site's regional location within the San Francisco Bay Area.

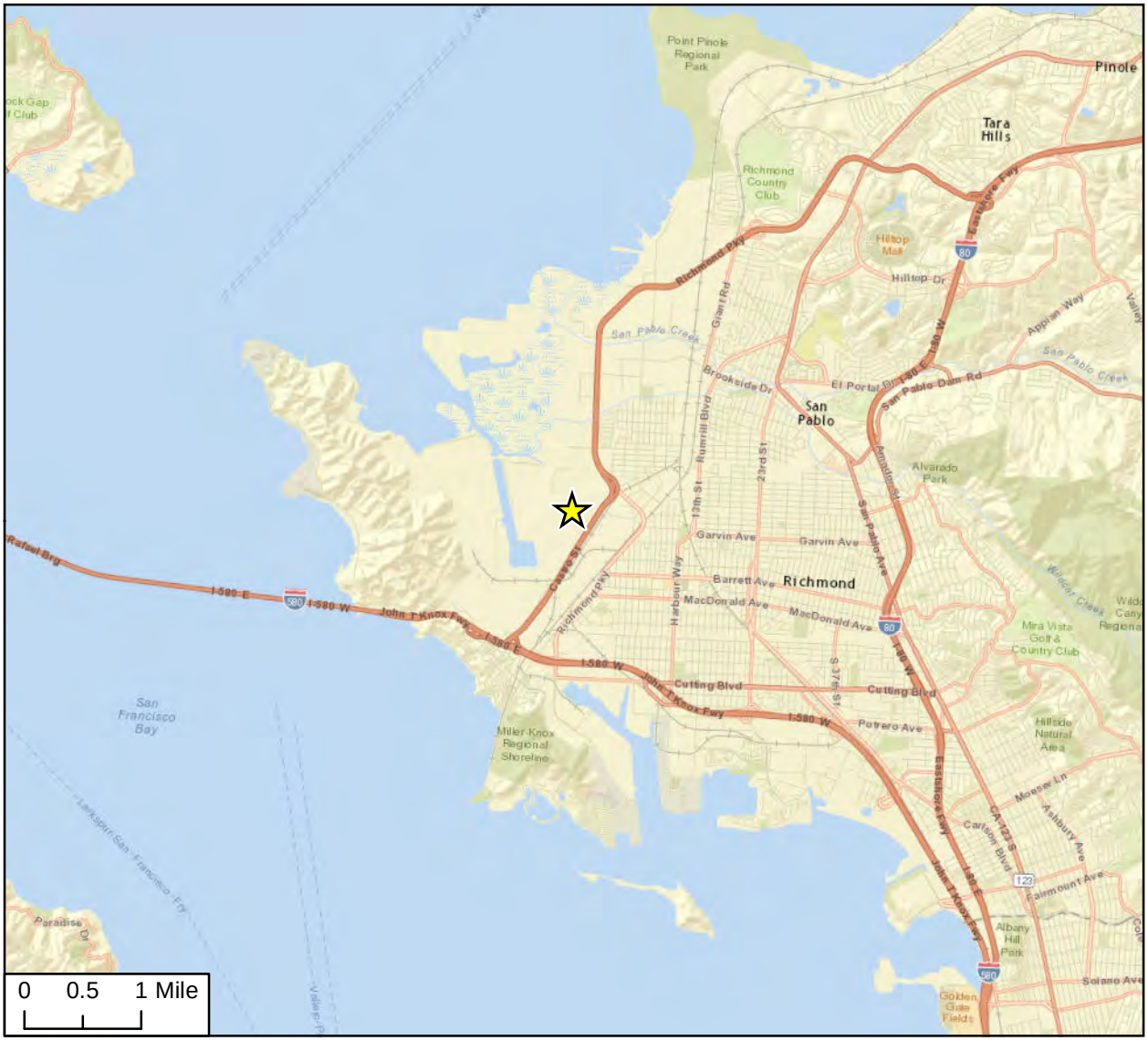
The proposed solar array is planned for construction and operation within two leased areas on the three adjacent parcels within the Richmond Chevron Refinery property near the intersection of West Hensley Street and Castro Street/Richmond Parkway. The parcels were operated as a landfill site and evaporation pond until 1987. In the mid- to late-1990s, both sites were filled, re-contoured, re-vegetated and are currently being maintained under a landfill closure agreement as vacant lots.

Major arterials providing immediate access to the project site include Interstate 580 and Richmond Parkway. The site is located in an industrial area of Richmond which includes permitted uses such as oil refining operations, energy producing facilities, utilities – major and minor, railroad operations, and storage and manufacturing facilities. There are no residential or retail uses in close proximity to the project site. The nearest such use are residences located northeast of the site on Vernon Avenue approximately 0.25 miles from the site. Peres Elementary School is located approximately 0.45 miles east of the site (across Richmond Parkway).

Figure 2-2 shows the project site and properties in the vicinity of the site within the City of Richmond. Figures 2-3, 2-4 and 2-5 provide photos of the site in its current condition.

2.3 PROJECT CHARACTERISTICS

The proposed project would involve site preparation, installation and operation of a 10.5 megawatt (MW) solar photovoltaic (PV) system at the project site. The installation would include approximately 80,000 thin-film, non-reflective solar panels, which, in combination with



Imagery provided by ESRI and its licensors © 2015.

N

★ Project Location

Regional Location

Figure 2-1

Imagery provided by Google and its licensors © 2015.

Site Vicinity

Figure 2-2

Photo 1: Former Fertilizer Pond site looking toward Castro St.

Photo 2: Former Fertilizer Pond site looking west toward main channel.

Site Photos

Figure 2-3

Photo 3: Former Landfill site looking south toward Castro St.

Photo 4: Former Landfill site looking Northwest.

Site Photos

Figure 2-4

Photo 5: Onsite looking North toward off site pond.

Photo 6: Channel road looking west toward Former Landfill 15 site.

Site Photos

Figure 2-5

11 utility-scale inverters, would convert sunlight into electricity. This would be fed directly into the Pacific Gas & Electric (PG&E) utility grid from a point adjacent to the site. The solar modules would use copper indium gallium selenide (CIGS) solar cells that are compliant with the European Union Restriction of Hazardous Substances (RoHS) directive, which restricts the use of certain hazardous waste substances in electrical and electronic equipment.

The project would be built in two phases. Phase I includes the installation of a 2 MW non-penetrating, ballasted, fixed-tilt PV array on the southern portion of the landfill area (approximately 13 acres of the 40 acre landfill). The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows. It should be noted that the Chevron Modernization EIR evaluated a solar project as a component of the overall project. This EIR provides more detail related to that original project (Phase I of the proposed project analyzed in this EIR) and provides project- and site-specific analysis for this component along with Phase 2. Each of the two phases of the proposed project have independent utility interconnections and each phase is independent of one another financially and physically. Thus, either phase could be developed separately.

Phase 2 of the proposed project includes the installation of:

1. 3.5 MW of single-axis tracking PV arrays on the 20-acre filled and compacted fertilizer pond. These arrays would extend from at least 30 inches above grade to a maximum of height of 14 feet in their highest position, would be aligned in a north/south orientation, spaced approximately 11 feet apart (east to west), and sloped at zero degrees; and

2. 5 MW of non-penetrating, ballasted, fixed-tilt PV arrays on the northern portion of the landfill area (27 acres of the 40-acre landfill). The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows.

The proposed site plan is shown on Figures 2-6 (Phase 1) and 2-7 (Phase 2). In addition, the two types of solar arrays (ballast and tracker types) are shown along with elevations in Figures 2-8 and 2-9.

All inverters and transformers would be mounted on concrete pads. The pads on the capped landfill would be placed above ground so as to not penetrate the landfill cap. Multiple pad-mounted transformers would be connected by above-grade conduits to switching substations and pole mounted metering connected to existing 12.47 kilovolt PG&E distribution lines. The electrical equipment would pose no electrical shock risk and would be safe for human and wildlife contact, and all electrical conduits would be rated for outdoor use.

Site access during construction and operation would be along existing paved roadways. All deliveries and materials would primarily enter by the existing Hensley Street gate onto paved access roads to the project site. Larger vehicles may be required to access the site through existing paved roads and security gates within the Chevron refinery to the west of the project site. Construction staging and parking would occur adjacent to the northwest of the landfill (labeled as "Construction Laydown Area" in Figures 2-6 and 2-7.

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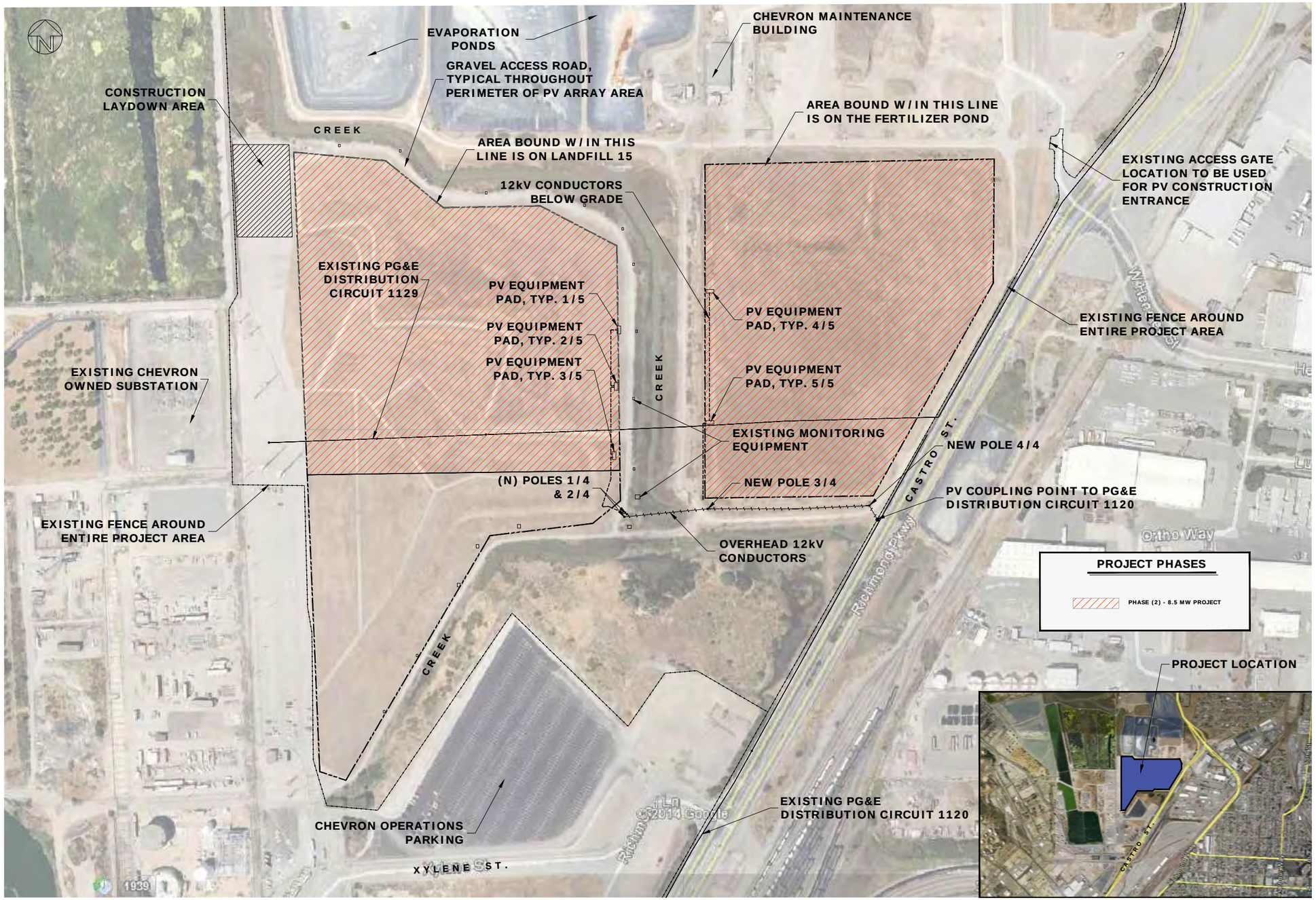
Phase 1 Project Area: 2 Megawatt Installation

Source: Stion, June2015

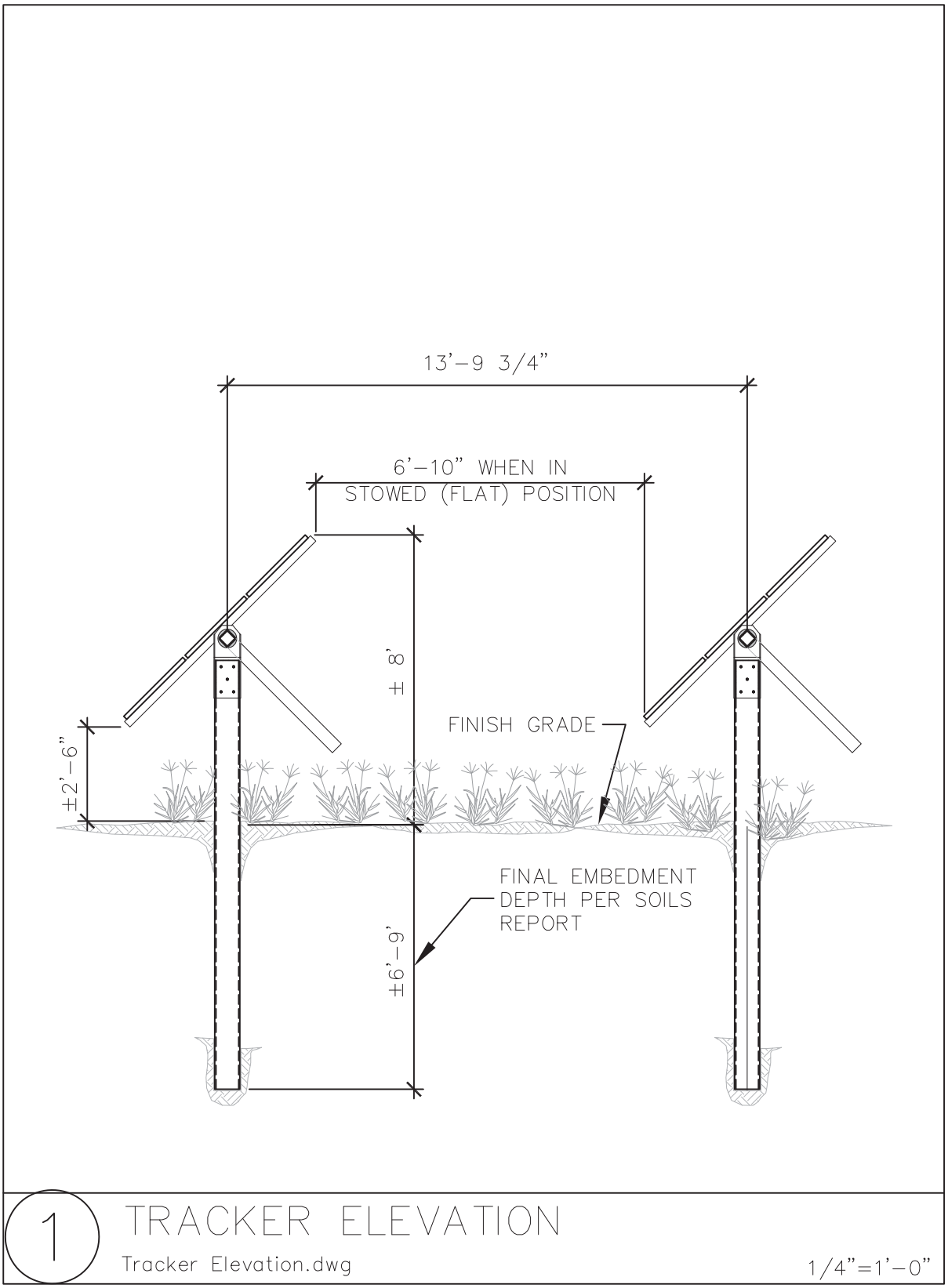
Figure 2-6



Phase 2 Project Area: 8.5 Megawatt Installation

Source: Stion, June2015.

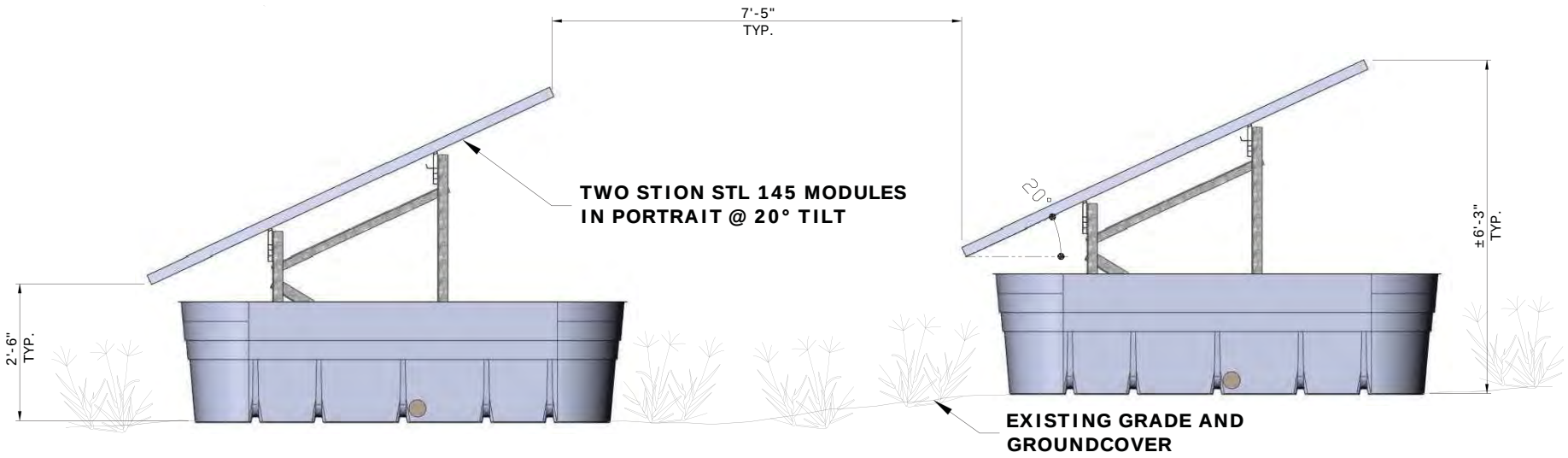
Figure 2-7



Tracker Elevation

Figure 2-8

Source: Stion, March 2015



Source: Stion, March 2015

Ballast Elevation

Figure 2-9

Construction of Phase 1 would take approximately 12 months to complete and Phase 2 construction of would begin following the start of construction for Phase I and would take approximately 15 months to complete. Total construction from start to finish would therefore take approximately 18 months. The construction workforce is expected to peak at 100 personnel, and would consist of pre-qualified laborers, electricians, craftsmen, supervisory, support and management staff. Construction would generally occur between 7:00 AM and 5:00 PM on weekdays, though additional work hours and days may be necessary to make up for unexpected delays or testing.

Construction and installation would require minimal vegetation removal and all disturbed areas would be re-vegetated with native grasses and wildflowers. Site preparation would require placement of up to 500 cubic yards of fill on the landfill and removal and redistribution of a temporary berm on the fertilizer pond area of approximately 3,400 cubic yards of soil among various low spots on this portion of the project site. Grading would be balanced onsite; no export or import of cut or fill material is proposed. Construction sites would be stabilized to minimize wind and storm water erosion and watering and other approved measures would be used to control dust onsite. Figure 2-10 shows the overall grading plan for the proposed project. At the end of the project's useful life (anticipated being 30 years or more), the proposed solar facility and associated infrastructure may be decommissioned.

2.4 PROJECT OBJECTIVES

The goals/objectives for the proposed Richmond Solar PV project include the following:

- *Increase the amount of local distributed renewable energy produced in and provided to MCE's participating jurisdictions and their energy customers.*
- *Provide a quality, diversified renewable energy system that conserves and enhances significant environmental resources and features.*
- *Incorporate features and amenities into the project that fit the local context, contribute to environmental sustainability, and are safe and easy to maintain for the long term.*

2.5 REQUIRED APPROVALS and PERMITS

The proposed project requires the following discretionary approvals:

- *Approval of the Project by the Marin Clean Energy Board of Directors.*
- *Approval by the City of Richmond's Design Review Board.*

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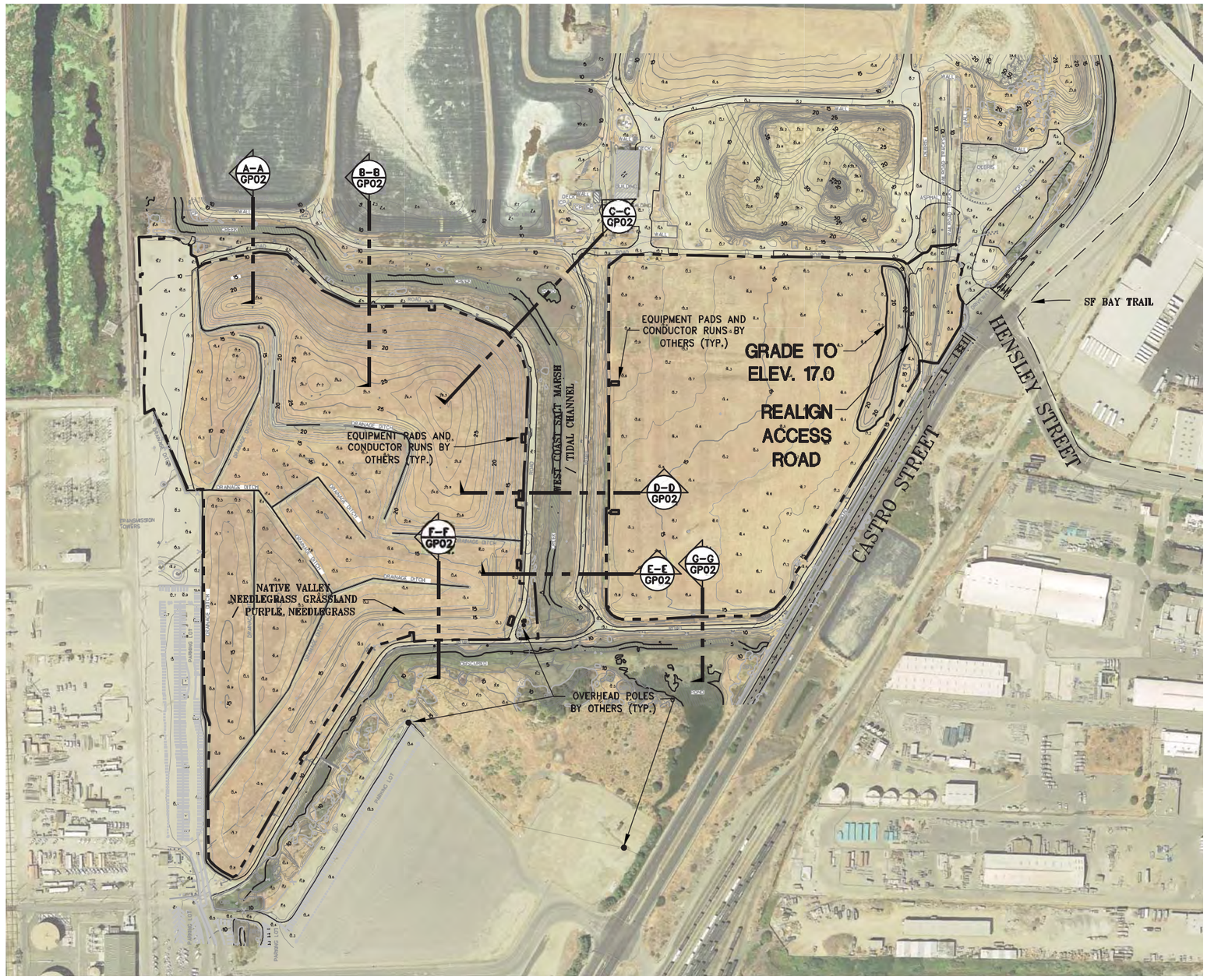


Grading Plan

Source: Wood Rogers, May 2015

Figure 2-10

3.0 ENVIRONMENTAL SETTING

This section describes the current environmental conditions on, and in the vicinity of the project area. More detailed descriptions of the setting for each environmental issue area can be found in Section 4.0, *Environmental Impact Analysis*.

3.1 REGIONAL SETTING

The project is located in the City of Richmond approximately one mile to the east of the San Pablo Peninsula and San Pablo Bay. Richmond encompasses approximately 52square miles and has an estimated population of 107,346 residents (California Department of Finance [DOF], May 2015). Regional topography includes variable topography and steeper slopes of the Coastal Ranges, with gentler slopes and more level terrain in the San Joaquin Valley to the east and in the East Bay Area to the west. The project is located in the San Francisco Bay Hydrologic Region. The project site, as is all of Contra Costa County, is within the seismically active region of the San Andreas Fault Zone.

Located adjacent to the San Francisco Bay, the City of Richmond enjoys a mild climate characterized by cool winters and moderate summers. According to the Western Regional Climate Center, Richmond's average temperatures range from about 66 degrees F in summer to 50 degrees F in winter. Annual rainfall averages about 23 inches per year, with most rainfall occurring between October and April.

3.2 SITE-SPECIFIC SETTING

The proposed solar array is planned for construction and operation at three adjacent (assessor) parcels within the Chevron Richmond Refinery property near the intersection of West Hensley Street and Castro Street/Richmond Parkway in the City of Richmond, California. The three assessor parcels were operated as a landfill and evaporation pond until 1987. In the mid-to late-1990s, the approximately 20 acre evaporation pond site was filled, re-contoured, re-vegetated, and is currently being maintained as a vacant lot; the approximately 40 acre landfill site was filled, re-contoured, caped, and re-vegetated and has been maintained as a closed landfill since March 1998. (Closure Certification Report Landfill15, Waste Discharge Order, Chevron Richmond Refinery, D&M Job No. 38825-001-179 was reviewed and is available upon request). The evaporation pond site contains a berm that was put in place to ensure that water was contained on the site. Since the closure of the pond site, this berm is no longer necessary.

In 1995, the 13-acre area that received waste from the Pollard Landfill was closed and capped with a vegetated cover. In 1996-1997, the remaining 28 acres of the landfill was closed and capped with asphalt (8.5 acres) or vegetated (19.5 acres) cover. The final cover over the landfill area is composed of a layer of 40-milimeter HDPE membrane covered by either two inches of asphalt concrete in the paved areas or 12 inches of vegetated fill in the non-paved areas (ARCADIS, 2012). A methane gas collection and vent system as well as surface drainage control facilities were constructed with the cover in order to protect groundwater resources, control methane emissions, and control stormwater (Dames & Moore, 1998).

Major arterials providing immediate access to the project site include Interstate 580 and Richmond Parkway. The site is located in an industrial area of Richmond which includes uses such as oil refining operations, energy producing facilities, railroad operations, and storage and manufacturing facilities. There are no residential or retail uses in close proximity to the project site. The nearest such uses are residences located approximately 0.25 miles northeast of the site on Vernon Avenue. Peres Elementary School is located approximately 0.45 miles east of the site (across Richmond Parkway).

3.3 CUMULATIVE PROJECTS

CEQA defines cumulative impacts as two or more individual actions that, when considered together, are considerable or will compound other environmental impacts. Cumulative impacts are the changes in the environment that result from the incremental impact of development of the proposed project and other nearby projects. For example, traffic impacts of two nearby projects may be insignificant when analyzed separately, but could have a significant impact when analyzed together. Cumulative impacts analysis provides a reasonable forecast of future environmental conditions and can more accurately gauge the effects of a series of projects.

The project site is within an Industrial area in Contra Costa County near the San Pablo Peninsula. Specifically the site is within the Chevron Richmond Refinery. The overall cumulative impacts methodology is based on a consideration of known and reasonably foreseeable projects in the vicinity of the Richmond Solar PV project; 3 MW of MCE Feed-In Tariff projects sited approximately 2 miles north of the Richmond Solar PV project; local and regional growth plans—including principally the Richmond General Plan 2030 (General Plan 2030), Plan Bay Area (the regional plan guiding Bay Area land use and transportation planning); and other Bay Area projects involving solar or renewable energy activities. This analysis considers reasonably foreseeable projects to be those: (1) for which an application has been submitted or informal municipal review is started; (2) for which environmental review is underway; and/or (3) that are partially completed. As site is located within the Chevron Richmond Refinery property (owned and operated by the Chevron Products Company), the cumulative analysis in this EIR considers those project components that are apart of the Chevron Refinery Modernization Project for which an EIR (SCH#2011062042) has been prepared by the City of Richmond. Project components of the Chevron Refinery Modernization Project include a hydrogen plant replacement, sulfur removal improvements, and other related infrastructure improvements to Facility piping, utility lines, and electrical systems.

Unless otherwise noted, cumulative development includes all development within the Chevron Richmond Refinery facility and in the Richmond General Plan.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

This section contains a discussion of the possible environmental effects of the proposed project for the specific issue areas that were identified through the NOP scoping process as having the potential to experience significant impacts.

"Significant effect" is defined by the *State CEQA Guidelines* §15382 as:

> *"a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant."*

The assessment of each issue area begins with the environmental setting and is followed by the impact analysis. Within the impact analysis, the first subsection identifies the methodologies used and the "significance thresholds," which are those criteria adopted by Marin Clean Energy (as the CEQA Lead Agency) or other resource agencies. Other thresholds are universally recognized or have been developed specifically for this analysis. The next subsection describes each impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. Each effect under consideration for an issue area is separately listed in bold text, with the discussion of the effect and its significance following. Each bolded impact listing also contains a statement of the significance determination for the environmental impact as follows:

> ***Significant and Unavoidable:*** *An impact that cannot be reduced to below the significance threshold level with implementation of reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per §15093 of the State CEQA Guidelines.* **Class I.**
>
> ***Significant but Mitigable:*** *An impact that can be reduced to below the significance threshold level with implementation of reasonably available and feasible mitigation measures. Such an impact requires findings to be made under §15091 of the State CEQA Guidelines.* **Class II.**
>
> ***Less than Significant:*** *An impact that may be adverse, but does not exceed the significance threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.* **Class III.**
>
> ***Beneficial Impact:*** *The project would result in a beneficial impact on the environment.* **Class IV.**
>
> ***No Impact:*** *No impact would occur.*

Following each environmental effect discussion is a listing of mitigation measures (if required) and the residual effects or level of significance remaining after the implementation of the measures. In those cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed as a residual effect. The

impact analysis concludes with a discussion of cumulative effects, which evaluates the impacts associated with the proposed project in conjunction with other future development in the area. Please refer to the Executive Summary for this EIR, which clearly summarizes all impacts and mitigation measures that apply to the proposed Richmond Solar PV project.

4.1 BIOLOGICAL RESOURCES

This section identifies biological resources on the project site and assesses the proposed project's impacts on these resources. Rincon Consultants conducted a review of readily available and relevant biological databases, literature, and agency documents to identify potential biological resources on the project site, including: occurrence records for special status plant species contained in the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi), occurrence records for sensitive biological resources (i.e., special status plant and animal species, and sensitive terrestrial natural communities) contained in the California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB), Biological Information and Observation System (BIOS), Rare Find Version 5 (https://www.dfg.ca.gov/biogeodata/cnddb) and eBird (Sullivan, et al., 2009), geographic distributions for federally listed species and federally designated critical habitat from the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (http://criticalhabitat.fws.gov), and USFWS National Wetlands Inventory (NWI) (http://wetlands.fws.gov).

This analysis also incorporates results of a reconnaissance-level field survey conducted within the project site by Rincon biologists on January 26, 2015. This field survey documented existing site conditions, the presence of any special status plant and animal species, sensitive vegetation communities, jurisdictional waters and wetlands, riparian habitat, and the potential suitability of onsite habitats to support special status species and/or nesting birds, based on our review of biological databases, literature, and agency documents. We did not, however, perform protocol-level special status species surveys at the time of this reconnaissance-level survey.

4.1.1 Setting

a. Regional Setting. The project site is located in western Contra Costa County. Contra Costa County stretches from Mount Diablo in the east to the San Francisco Bay in the west and is separated ecologically, with the western portion of the county exposed to a marine influence that the eastern portion of the county is not, making the eastern portion of the County much hotter and dryer than the coastal portion.

The eastern part of the county supports a range of topography, from sea-level tidelands along the Sacramento-San Joaquin Delta to Mount Diablo at an elevation of 3,849 feet. It also supports a wide range of land cover types, including: chaparral, savanna, grassland, woodland, wet meadows, dune scrub, alkali wetland complexes, and tidal marsh (San Francisco Estuary Institute, 2011). San Francisco Bay borders the western (coastal) portion of the county, which is characterized by tidal marshes and wetlands of the San Francisco Bay-Delta estuary,.

Much of the western and central portions of the County have been developed as primarily urban, residential, and industrial, where most of the its eastern portion has been historically disturbed by agriculture or ranching activities, though there still remain some relatively undisturbed habitats in these regions (Contra Costa County, 2012).

b. Project Site Setting. The project site is located within a portion of the Chevron Products Company's Richmond Refinery that has been previously used as part of the refinery's

industrial operations. Specifically, the proposed solar site was operated (separately) as a landfill and evaporation pond until 1987. In the mid- to late-1990s, the approximately 20-acre evaporation pond site was filled, re-contoured, re-vegetated, and is currently being maintained as a vacant lot; the approximately 40-acre landfill site was filled, re-contoured, capped, and re-vegetated and has been maintained as a closed landfill since March 1998. (Closure Certification Report Landfill15, Waste Discharge Order, Chevron Richmond Refinery, D&M Job No. 38825-001-179 was reviewed and is available upon request).

Existing Habitat. As described above, the site has been heavily disturbed from previous development. The majority of the project site is currently covered with (post-development) annual and perennial grasses (non-native grassland) and herbs with coyote bush (*Baccharis pilularis*) beginning to recruit naturally on the site (Figure 4.1-1). Several non-native, invasive plant species tracked by the California Invasive Plant Council (http://www.cal-ipc.org/paf/) were identified on the site including, but not limited to, slender oat (*Avena barbata*), pampas grass (*Cortaderia jubata*), yellow star-thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), fennel (*Foeniculum vulgare*), cutleaf geranium (*Geranium dissectum*), and tumble mustard (*Hirschfeldia incana*).

A small purple needlegrass (*Stipa pulchra*) community (>10% cover on less than one acre; see Figure 4.1-1) grows on a raised berm near the southeast corner of the landfill site and is considered Purple needle grass grassland (*Nassella pulchra* Alliance) – a CDFW sensitive community. While there is no available information on how this community came to occur at this location, it is unlikely to be a remnant natural community, given the past history of disturbance, and could have been a component of the landfill reclamation, as purple needlegrass is a common ingredient of commercial restoration seed mixes. Furthermore, this species is successful in disturbed areas, and would be expected to dominate an area restored using a seed mix that contained this species.

A small area of North Coast Salt Marsh and a tidally influenced channel separate the capped landfill from the filled and compacted fertilizer pond (see Figure 4.1-1). Jurisdictional freshwater emergent marsh habitat occurs outside of the project boundaries to the south, with paved access roads surround both parcels and separating them from these wetland habitats. Concrete-lined drainage ditches traverse the landfill site and appear to be regularly maintained to control vegetation growth within and around these ditches. A constructed swale, designed to capture and carry storm water to treatment ponds north of this parcel, occurs along the south and west sides of the evaporation pond. There is no riparian or wetland vegetation within this swale, but there are water pipes, some of which appear to be active while others do not.

Wildlife species observed, but likely transient on the project site include Canada goose (*Branta canadensis*), white-crowned sparrow (*Zonotrichia leucophrys*), American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), black tailed jack rabbit (*Lepus californicus*), California black-tailed deer (*Odocoileus hemionus*), and sign (burrow complex) of Botta's pocket gopher (*Thomomys bottae*).

Imagery provided by Google and its licensors © 2015.

Site Conditions

Figure 4.1-1

Special-Status Plant and Animal Species. For the purposes of this study, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS under the federal Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531 *et seq*.); those listed or proposed for listing, or candidates for listing as rare, threatened, or endangered by the CDFW under the state Endangered Species Act; animals designated as "Fully Protected," "Species of Special Concern," or "Rare," by the CDFW; and those species on the *Special Vascular Plants, Bryophytes, and Lichens List* (California Department of Fish and Game [now CDFW], 2010). This latter document includes the *California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California, Seventh Edition* (http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi) as updated online. Those plants contained on the CNPS Lists 1, 2, 3, and 4 are considered special-status species in this EIR, per the CNPS code definitions:

- *List 1A = Plants presumed extinct in California;*
- *List 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat);*
- *List 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened);*
- *List 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20% of occurrences threatened or no current threats known);*
- *List 2 = Rare, threatened or endangered in California, but more common elsewhere;*
- *List 3 = Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA);*
- *List 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80% occurrences threatened); and*
- *List 4.4= Plants of limited distribution (watch list), not very endangered in California (<20% occurrences threatened or no current threats known).*

See Table 4.4-1 for a list of potentially occurring special status plants and 4.4-2 for a list potentially occurring special status animals. See Figure 4.4-2 for CNDDB occurrences of special status plants and animals within 5 miles of the project site.

Table 4.1-1 Potentially Occurring Special Status Plants

Scientific Name Common Name	Status Federal/State Global/State Rank CRPR	Habitat Requirements	Potential for Occurrence
Plants			
Amsinckia lunaris Bent-flowered fiddleneck	-- / -- G2? / S2? 1B.2	Annual herb. Blooms Mar-Jun. Cismontane woodland, valley and foothill grassland. 50-500m (165-1640ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Arctostaphylos pallida Pallid manzanita	FT / SE G1 / S1 1B.1	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub. Grows on uplifted marine terraces on siliceous shale or thin chert. May require fire. 185-465m (606 – 1525ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Astragalus tener var. tener Alkali milk-vetch	-- / -- G2T2 / S2 1B.2	Bloom period: March-June. Occurs in alkaline soils within playas, valley and foothill grassland (adobe clay), and vernal pools. Elevations: 3-196 feet.	Not expected. Site is heavily disturbed and lacks suitable habitat. This species is presumed extirpated from Contra Costa County (CNPS, 2015).
California macrophylla Round-leaved filaree	-- / -- G2 / S2 1B.1	Bloom period: March-May. Occurs in clay soils within cismontane woodland and valley and foothill grassland. Elevations: 49-3,937 feet.	Not expected. Site is heavily disturbed and lacks suitable habitat.
Calochortus tiburonensis *Tiburon mariposa-lily*	FT / ST G1 / S1 1B.1	Valley and foothill grassland. On open, rocky, slopes in serpentine grassland. 50-150m (164-492ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Calystegia purpurata ssp. saxicola Coastal bluff morning-glory	-- / -- G4T2T3 / S2S3 1B.2	Coastal dunes, coastal scrub, coastal bluff scrub, north coast coniferous forest. 10-105m (32-344ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Castilleja affinis var. *neglecta* Tiburon paintbrush	FE / SE G4G5T1 / S1 1B.2	Valley and foothill grassland. Rocky serpentine sites. 75-400m (246-1312ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Chloropyron maritimum ssp. *palustre* Point Reyes salty bird's-beak	-- / -- G4?T2 / S2 1B.2	Annual herb (hemiparasitic). Blooms Jun-Oct. Coastal salt marsh. Usually in coastal salt marsh with *Salicornia, Distichlis, Jaumea, Spartina*, etc. 0-10 m (0-35ft).	Not expected. Proposed development area is heavily disturbed and lacks suitable habitat.

Table 4.1-1 Potentially Occurring Special Status Plants

Scientific Name Common Name	Status Federal/State Global/State Rank CRPR	Habitat Requirements	Potential for Occurrence
Dirca occidentalis Western leatherwood	-- / -- G2G3 / S2S3 1B.2	Perennial deciduous shrub. Blooms Jan-Apr. Broadleafed upland forest, chaparral, closed-cone coniferous, cismontane woodland, N Coast conifer forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. 30-550m (100-1805ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	-- / -- G5T2 / S2 1B.2	Annual herb. Blooms May-Sep. Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Serpentine soils; sandy to gravelly sites. 0-700m (0-2295ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Fritillaria liliacea Fragrant fritillary	-- / -- G2 / S2 1B.2	Bloom period: February-April. Often occurs in serpentinite soils within cismontane woodland, coastal prairie, coastal scrub and valley and foothill grassland. Elevations: 10-1,345 feet.	Not expected. Site is heavily disturbed and lacks suitable habitat.
Helianthella castanea Diablo helianthella	-- / -- G2 / S2 1B.2	Bloom period: March-June. Occurs in broad leafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, as well as valley and foothill grassland. Elevations: 197-4265 feet.	Not expected. Site is heavily disturbed and lacks suitable habitat.
Hesperolinon congestum Marin western flax	FT / ST G2 / S2 1B.1	Annual herb. Blooms Apr-Jul. Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. 30-370m (100-1215ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Hoita strobilina Loma Prieta hoita	-- / -- G2 / S2 1B.1	Chaparral, cismontane woodland, riparian woodland. Serpentine; mesic sites.	Not expected. Site is heavily disturbed and lacks suitable habitat.
Holocarpha macradenia Santa Cruz tarplant	FT / SE G1 / S1 1B.1	Coastal prairie, coastal scrub, valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives. 10-220m (32-722ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Pentachaeta bellidiflora White-rayed pentachaeta	FE / SE G1 / S1 1B.1	Annual herb. Blooms Mar-May. Valley and foothill grassland, cismontane woodland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 35-620 m (115-2035ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Plagiobothrys glaber Hairless popcornflower	-- / -- GH / SH 1A	Annual herb. Blooms Mar-May. Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. 5-180m (15-590ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.

Table 4.1-1 Potentially Occurring Special Status Plants

Scientific Name Common Name	Status Federal/State Global/State Rank CRPR	Habitat Requirements	Potential for Occurrence
Streptanthus glandulosus ssp. niger Tiburon jewelflower	FE / SE G4T1 / S1 1B.1	Valley and foothill grassland. Shallow, rocky serpentine slopes. 30-150m (98-492ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Suaeda californica California seablite	FE / -- G1 / S1 1B.1	Perennial evergreen shrub. Blooms July-October. Found on the margins of coastal salt marshes and swamps. Known elevation ranges from 0-15 meters (0-50 feet).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Symphyotri-chum lentum Suisun Marsh aster	-- / -- G2 / S2 1B.2	Perennial rhizomatous herb. Blooms May-Nov. Marshes and swamps (brackish and freshwater). Most often seen along sloughs with *Phragmites, Scirpus*, blackberry, *Typha*, etc. 0-3m (0-9ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Trifolium amoenum Showy rancheria clover	FE / -- G1 / S1 1B.1	Annual herb. Blooms Apr-Jun. Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Most recently sited on roadside and eroding cliff face. 5-415m (15-1360ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Trifolium hydrophilum Saline clover	-- / -- G2 / S2 1B.2	Annual herb. Blooms Apr-Jun. Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0-300m (0-985ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Triquetrella californica Coastal triquetrella	-- / -- G1 / S1 1B.2	Moss. Coastal bluff scrub, coastal scrub valley and foothill grasslands. Grows within 30m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. 10-100m (30-330ft).	Not expected. Site is heavily disturbed and lacks suitable habitat.
Symphyotrichum lentum Suisun Marsh aster	-- / -- G2 / S2 1B.2	Bloom period: May-November. Occurs in brackish or freshwater marshes and swamps. Elevations: 0-10 feet.	Not expected. Site is heavily disturbed and lacks suitable habitat.
Vegetation Communities			
Coastal Terrace Prairie	-- / -- G2 / S2.1 --	Coastal prairie	Not present. Site is heavily disturbed and lacks coastal prairie habitat.
Northern Coastal Salt Marsh	-- / -- G3 / S3.2 --	Marsh and swamp Wetland	Present. Northern Coastal Salt Marsh is mapped within the project boundaries but outside of the proposed development area.
Northern Maritime Chaparral	-- / -- G1 / S1.2 --	Chaparral	Not present. Site is heavily disturbed and lacks northern maritime chaparral habitat.

Table 4.1-1 Potentially Occurring Special Status Plants

Scientific Name Common Name	Status Federal/State Global/State Rank CRPR	Habitat Requirements	Potential for Occurrence
Serpentine Bunchgrass	-- / -- G2 / S2.2 --	Valley and foothill grassland.	Not present. Site is heavily disturbed and lacks serpentine bunchgrass habitat.
Valley Needlegrass Grassland	-- / -- G3 / S3.1 --	Valley and foothill grassland.	Present. Site contains purple needlegrass with greater than 10 percent of the herbaceous layer along a berm within the southeast part of the landfill site. The project has been designed to avoid this community.

Table 4.1-2. Potentially Occurring Special Status Animals

Scientific Name Common Name	Status Federal/State Global/State Rank CDFW	Habitat Requirements	Potential for Occurrence
Amphibians			
Rana draytonii California red-legged frog	FT / -- G2G3 / S2S3 SSC	Semi-permanent or permanent water at least 2 feet deep, bordered by emergent or riparian vegetation, and upland grassland, forest or scrub habitats for estivation and dispersal.	Not expected. Suitable habitat not present on site.
Birds			
Ardea alba *Great egret*	-- / -- G5 / S4 SS	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Not expected. Suitable nesting habitat not present on site. May forage in adjacent salt and freshwater marshes.
Ardea herodias Great blue heron	-- / -- G5 / S4 SS	Colonial nester in tall trees, cliffsides, and sequesters spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Not expected. Suitable nesting habitat not present on site. May forage in adjacent salt and freshwater marshes.
Athene cunicularia Burrowing owl	-- / -- G4 / S3 SSC	Burrow sites in open dry annual or perennial grasslands, deserts and scrublands characterized by low growing vegetation. Also inhabits anthropogenic habitats such as campuses, golf courses, cemeteries, airports, and grazed pastures.	Low. Marginal foraging and nesting habitat is present within and adjacent to the site.
Asio flammeus Short-eared owl	-- / -- G5 / S3 SSC	Found in swamplands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Low. Marginal foraging and nesting habitat occurs within and adjacent to the site.

Table 4.1-2. Potentially Occurring Special Status Animals

Scientific Name Common Name	Status Federal/State Global/State Rank CDFW	Habitat Requirements	Potential for Occurrence
Circus cyaneus Northern harrier	-- / -- G5 / S3 SSC	Occurs in open areas, particularly in grasslands, wet meadows and marshes; requires large areas over which to forage.	Low. Marginal foraging and nesting habitat occurs within and adjacent to the site.
Egretta thula *Snowy egret*	-- / -- G5 / S4 --	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Not expected. Suitable habitat not present on site. May forage in adjacent salt and freshwater marshes.
Elanus leucurus White-tailed kite	-- / -- G5 / S3S4 FP	Occurs throughout most of California's coastal and valley regions excluding the Cascade, Sierra Nevada, Mojave Desert, and Peninsular Ranges. Grasslands, dry farmed agricultural fields, savannahs and relatively open oak woodlands, and other relatively open lowland scrublands.	Low. Marginal foraging habitat occurs within the site.
Hydroprogne caspia Caspian tern	-- / -- G5 / S4 --	Nests on sandy or gravely beaches and shell banks in small colonies inland and along the coast. Inland fresh-water lakes and marshes; also, brackish or salt waters of estuaries and bays.	Not expected. Suitable habitat not present on site.
Laterallus jamaicensis coturniculus California black rail	-- / ST G3G4T1 / S1 FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about one inch that does not fluctuate during the year and dense vegetation for nesting habitat.	Not expected. Suitable nesting habitat not present on site. May forage in adjacent salt and freshwater marshes.
Melospiza melodia pusillula Alameda song sparrow	-- / -- G5T2? / S2? SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	Not expected. Suitable nesting habitat not present on site.
Melospiza melodia samuelis San Pablo song sparrow	-- / -- G5T2? / S2? SSC	Resident of salt marshes along the north side of San Francisco and San Pablo bays. Inhabits tidal sloughs in the Salicornia marshes; nests in Grindelia bordering slough channels.	Not expected. Suitable nesting habitat not present on site.
Nycticorax nycticorax Black-crowned night heron	-- / -- G5 / S4 --	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	Not expected. Suitable nesting habitat not present on site. May forage in adjacent salt and freshwater marshes.

Table 4.1-2. Potentially Occurring Special Status Animals

Scientific Name Common Name	Status Federal/State Global/State Rank CDFW	Habitat Requirements	Potential for Occurrence
Phalacrocorax auritus Double-crested cormorant	-- / -- G5 / S4 WL	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along the coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Not expected. Suitable habitat not present on site.
Rallus longirostris obsoletus California clapper rail	FE / SE G5T1 / S1 FP	Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Not expected. Suitable nesting habitat not present on site. May forage in adjacent salt and freshwater marshes.
Xanthocephalus xanthocephalus Yellow-headed blackbird	-- / -- G5 / S3 SSC	Nests in freshwater emergent wetlands with dense vegetation & deep water. Often along borders of lakes or ponds. Nests only where large insects such as *Odonata* are abundant, nesting timed with maximum emergence of aquatic insects.	Not expected. Suitable nesting habitat not present on site.
Fishes			
Archoplites interruptus Sacramento perch	-- / -- G2G3 / S1 SSC	Historically present in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	Not expected. Suitable habitat not present on site.
Spirinchus thaleichthys Longfin smelt	FC / ST G5 / S1 SSC	Open water of estuaries. Can be present in both the seawater and freshwater areas, typically in the middle or deeper parts of the water column.	Not expected. Suitable habitat not present within proposed development areas on site.
Thaleichthys pacificus Eulachon	FT / -- G5 / S3 SSC	Found in Klamath River, Mad River, Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers w/ moderate water velocities & bottom of pea-sized gravel, sand & woody debris.	Not expected. Suitable habitat not present on site.
Invertebrates			
Adela oplerella Opler's longhorn moth	-- / -- G2 / S2 --	From Marin Co & the Oakland area on the inner coast ranges south to Santa Clara Co. One record from Santa Cruz Co. All but Santa Cruz site is on serpentine grassland. Larvae feed on *Platystemon californicus.*	Not expected. Suitable serpentine habitat not present on site.

Table 4.1-2. Potentially Occurring Special Status Animals

Scientific Name Common Name	Status Federal/State Global/State Rank CDFW	Habitat Requirements	Potential for Occurrence
Danaus plexippus Monarch butterfly	-- / -- G4T2T3 / S2S3 --	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Not expected. Suitable habitat not present on site.
Helminthoglypta nickliniana bridgesi Bridge's coast range shoulderband	-- / -- G3T1 / S1 --	Inhabits open hillsides of Alameda and Contra Costa counties. Tends to colonize under tall grasses and weeds.	Not expected. Suitable habitat not present on site.
Microcina leei Lee's micro-blind harvestman	-- / -- G1 / S1 --	Xeric habitats in the San Francisco Bay region. Found beneath sandstone rocks in open oak grassland.	Not expected. Suitable habitat not present on site.
Microcina tiburona Tiburon micro-blind harvestman	-- / -- G1 / S1 --	Open hilly grassland habitat in areas of serpentine bedrock. Found on the undersides of serpentine rocks near permanent springs.	Not expected. Suitable serpentine habitat not present on site.
Tryonia imitator Mimic tryonia (=California brackishwater snail)	-- / -- G2 / S2 --	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County. Present only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	Not expected. Suitable habitat not present on site.
Mammals			
Antrozous pallidus Pallid bat	-- / -- G5 / S3 SSC	Deserts, grasslands, shrub lands, woodlands, and forest. Most common in open, dry, habitats with rocky area for roosting. Roost must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Not expected. Suitable habitat not present on site. No suitable roosting habitat on site.
Corynorhinus townsendii Townsend's big-eared bat	-- / Cand. ST G3G4 / S2 SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls & ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Not expected. Suitable habitat not present on site. No suitable roosting habitat on site.

Table 4.1-2. Potentially Occurring Special Status Animals

Scientific Name Common Name	Status Federal/State Global/State Rank CDFW	Habitat Requirements	Potential for Occurrence
Lasionycteris noctivagans Silver-haired bat	-- / -- G5 / S3S4 --	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.	Not expected. Suitable habitat not present on site. No suitable roosting habitat on site.
Lasiurus cinereus *Hoary bat*	-- / -- G5 / S4 --	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Not expected. Suitable habitat not present on site. No suitable roosting habitat on site.
Microtus californicus sanpabloensis San Pablo vole	-- / -- G5T2T1 / S1S2 SSC	Saltmarshes of San Pablo Creek, on the south shore of San Pablo Bay. Constructs burrow in soft soil. Feeds on grasses, sedges and herbs. Forms a network of runways leading from the burrow.	Not expected. Suitable habitat not present within proposed development areas on site.
Nyctinomops macrotis Big free-tailed bat	-- / -- G5 / S3 SSC	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	Not expected. Suitable habitat not present on site. No suitable roosting habitat on site.
Reithrodontomys raviventris Salt-marsh harvest mouse	FE / SE G1G2 / S1S2 --	Only in the saline emergent wetlands of San Francisco bay and its tributaries. Pickleweed is primary habitat. Does not burrow, but builds loosely organized nests. Requires higher areas for flood escape.	Not expected. Suitable habitat not present within proposed development areas on site.
Sorex vagrans halicoetes Salt-marsh wandering shrew	-- / -- G5T1 / S1 SSC	Salt marshes of the south arm of San Francisco Bay. Medium high marsh 6-8 ft above sea level where abundant driftwood is scattered among Salicornia.	Not expected. Suitable habitat not present on site and the project is north of the known range of the species.
Reptiles			
Actinemys (=*Emys*) *marmorata* Western pond turtle	-- / -- G3G4/S3 SSC	Rivers, ponds, freshwater marshes; nests in upland areas (sandy banks or grassy open fields) up to 1,640 feet from water.	Not expected to occur. The project site does not support suitable microhabitat conditions.
Coluber (=*Masticophis*) *lateralis euryxanthus* Alameda whipsnake	FT / ST G4T2 / S2 --	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly utilizes south-facing slopes & ravines, with rock outcrops, deep crevices or abundant rodent burrows.	Not expected. No suitable habitat occurs within the BSA. Not expected to occur.

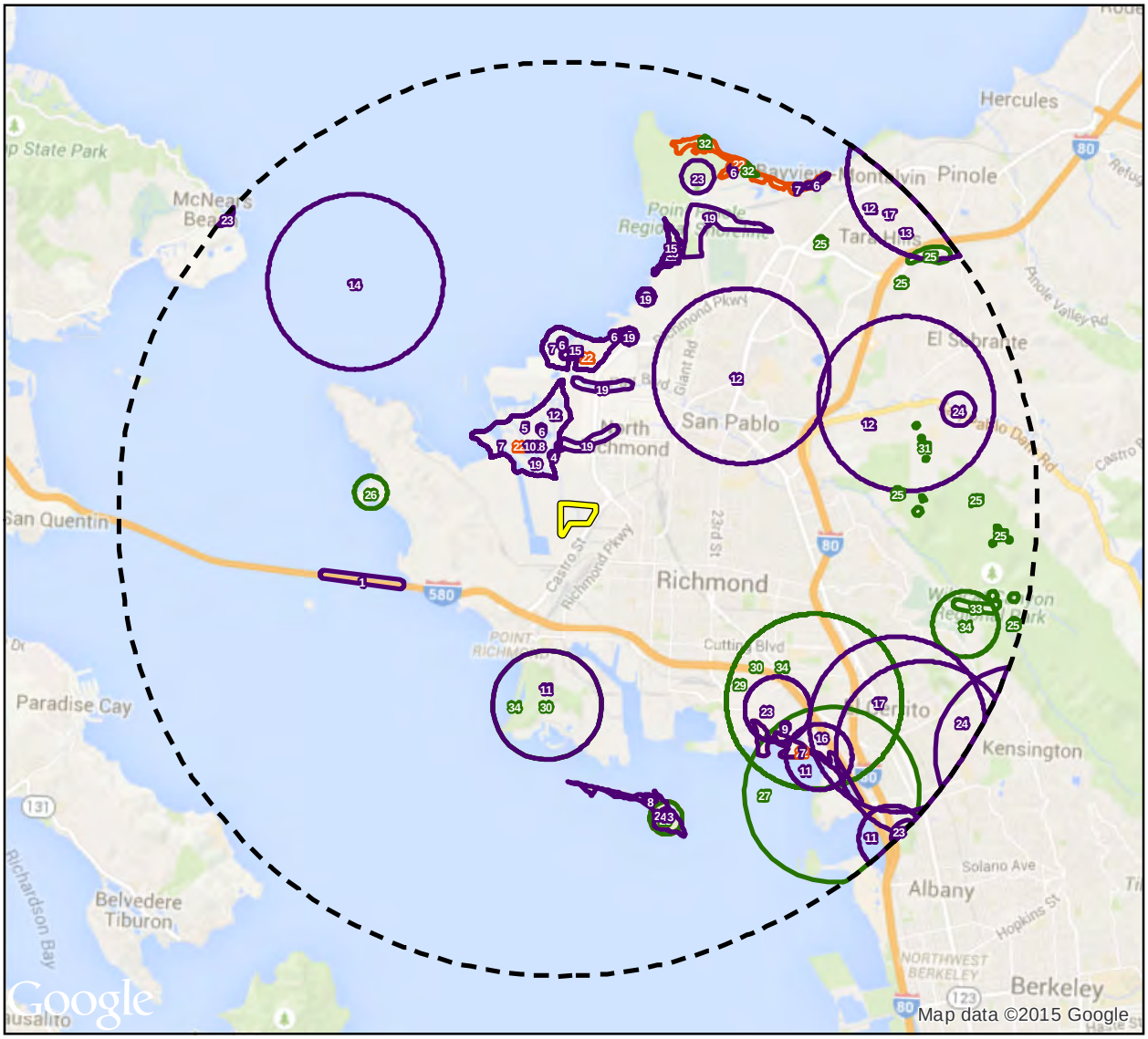
Special-Status Plants. A search of the CNDDB records identified 23 special-status plant species tracked within the vicinity of the project site. None of these plant communities were found within the project site boundaries nor are any expected to occur due to the site having been re-vegetated within the last 20 years. The site is currently dominated by non-native and ruderal plant species, creating site conditions unsuitable for special status plant species to occur.

Special Status Animal Species. Biological database review identified 35 special status animal species known to occur within the vicinity of the project site. However, the site lacks suitable habitat and vegetation communities required to support the majority of special status wildlife and plants. Only four of the 35 species have the potential to occur within proposed disturbance areas, and predominantly as foragers. These species include short-eared owl (*Asio fammeus*, California State Species of Special Concern [SSC]), northern harrier (*Circus cyaneus*, California SSC), white-tailed kite (*Elanus leucurus*, California Fully Protected Species), and burrowing owl (*Athene cunicularia,* California SSC). All four of these species have the potential to occur within disturbed habitats as found on the project site, and all four have been documented by the CNDDB within one to five miles of the project site. All four species could use the project site for foraging during the periods of the year that they are present in the region. Suitable open, grassy, and marshy foraging habitat occurs within two miles of the project site, but not on the site itself, and the project site contains only marginally suitable nesting habitat for two of the species: northern harrier and burrowing owl. Although there is some potential for these species having to occur on the site, it is likely very small, based on the level of disturbance and surrounding industrial activity (including routine refinery operations.

The project site is located within the Chevron Refinery, certain projects and operations of which are subject to the mitigation measures outlined in the Chevron Refinery Modernization Project EIR (certified in July of 2014 by the City of Richmond). That EIR identified unlikely, but potential impacts to several "small" mammals that occur in the region, including salt marsh harvest mouse, Suisun ornate shrew, saltmarsh wandering shrew, and San Pablo vole. Although no habitat for these species exists on the project site, the EIR concluded that individuals of these species could conceivably disperse through the solar facility site from nearby degraded marsh habitat. Based on this potential impact, the EIR included Mitigation Measure BIO-2 to minimize the potential of direct impacts to these species. However, the specific project site evaluated for this EIR is:

1. Inland from Herman's Slough;
2. Separated from it by disturbed and developed areas;
3. Does not support suitable habitat for these species; and
4. Is not situated between any suitable marsh habitat areas.

Consequently, there is little potential for these species to move through the project site.



Imagery provided by ESRI and its licensors © 2015.
California Natural Diversity Database, June 2015.
Additional suppressed records reported by the CNDDB known to occur or potentially occur within this search radius include: longfin smelt, Alameda whipsnake, monarch - California overwintering population

0 1 2
Miles

N

Project Boundary
5 Mile Buffer

CNDDB

Animals
Plants
Natural Communities

1 - double-crested cormorant
2 - snowy egret
3 - black-crowned night heron
4 - white-tailed kite
5 - northern harrier
6 - California black rail
7 - California clapper rail
8 - Caspian tern
9 - burrowing owl
10 - short-eared owl
11 - Alameda song sparrow
12 - San Pablo song sparrow
13 - yellow-headed blackbird
14 - eulachon
15 - salt-marsh wandering shrew
16 - hoary bat
17 - pallid bat
18 - salt-marsh harvest mouse
19 - San Pablo vole
20 - western pond turtle
21 - Valley Needlegrass Grassland
22 - Northern Coastal Salt Marsh
23 - monarch - Ca overwintering population
24 - Bridges' coast range shoulderband
25 - Santa Cruz tarplant
26 - Suisun Marsh aster
27 - California seablite
28 - coastal bluff morning-glory
29 - alkali milk-vetch
30 - saline clover
31 - Loma Prieta hoita
32 - soft salty bird's-beak
33 - western leatherwood
34 - fragrant fritillary

California Natural Diversity Database
Occurences within 5 Miles

Figure 4.1-2

The eBird database reports only a single white-tailed kite observation within the project area during the last five years, but contains numerous white-tailed kite and northern harrier observation records within two miles of the project site – particularly in the Wildcat Marsh/West County Wastewater District vicinity, where they were reported year round, but substantially less in the winter. eBird also reports:

1. Two short-eared owl observations from the winters of 2006 and 2008 within four miles of the project site; and
2. Four burrowing owl observations within 4.5 miles of the project site within the last five years. All four observations occurred during the non-breeding season; however, the species has the potential to occur in the region year round and is known to breed in greater San Francisco Bay area.

Natural Communities. The available biological databases identify five natural communities within the vicinity of the project site. One of these natural communities – North Coast Salt Marsh (State Rank S3.2) – occurs within 100 feet of both of the parcels proposed for solar array installation (as shown in Figure 4.1-1). These parcels are, however, surrounded by existing paved roads that separate the project site from the surrounding area and the North Coast Salt Marsh natural community.

Valley Needlegrass Grassland (State Rank S3.1) is a second sensitive community identified within the project vicinity. A Manual of California Vegetation Second Edition (MCV 2nd Edition; Sawyer et al. 2009) describes this *Stipa pulchra* community type as "dominant or characteristically present in the herbaceous layer with other perennial grasses." The membership rule for this community is *Stipa pulchra* "usually greater than ten percent cover of the herbaceous layer" (Sawyer et al. 2009). The population of *Stipa pulchra* observed onsite meets the membership rules outlined in the MCV 2nd Edition for Valley Needlegrass Grassland and is considered present on site. There is no information on how this community developed at this location; however, it is likely the result of restoration planting activity that involved the use of a seed mix that contained this species.

Nesting Birds. Existing site conditions provide suitable habitat for nesting birds; specifically, herbaceous ground cover onsite provides habitat for ground-nesting birds such as mourning dove, killdeer and horned lark. Additionally, coyote brush shrub present immediately adjacent to the project site provides nesting habitat for a number of species including white-crowned sparrow, song sparrow, California towhee, house finch, and other song birds. As discussed above, the project site also contains marginally suitable nesting habitat for northern harrier and burrowing owl. These species are unlikely to nest on site, but we could not completely eliminate their potential for nesting here.

Jurisdictional Waters. The North Coast Salt Marsh, tidal channels, and freshwater emergent marsh within the immediate vicinity of the project site would likely fall within CDFW, U.S. Army Corps of Engineers (USACE), and Regional Water Quality Control Board (RWQCB) jurisdictions. The freshwater emergent marsh is located outside of the project boundaries and isolated from the proposed development areas. The North Coast Salt Marsh is also within the project boundaries; however the project is designed to avoid all impacts within this habitat, and no portions of the salt marsh are within the proposed development areas.

The constructed swale and concrete-lined ditches observed onsite to manage storm water runoff may be considered waters of the State pursuant to the Porter-Cologne Water Quality Control Act and could fall under jurisdiction of the RWQCB.

c. Regulatory Setting. The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. A number of federal and state statutes provide a regulatory structure that guides the protection of biological resources.

Federal.

Endangered Species Act of 1973. The Federal Endangered Species Act (ESA) and implementing regulations (Title 16 United States Code (U.S.C.) §§ 1531 *et seq*., Title 50 Code of Federal Regulations (C.F.R.) §§ 17.1 *et seq*.) include provisions for the protection and management of federally listed threatened or endangered plants and animals and their designated critical habitats. Section 7 of the ESA requires a permit to take threatened or endangered species during lawful project activities. The administering agency is the USFWS for terrestrial, avian, and most aquatic species.

Fish and Wildlife Coordination Act. Section 7 of Fish and Wildlife Coordination Act (16 U.S.C., § 742a, *et seq*., 16 U.S.C., § 1531, et seq., and 50 C.F.R. § 17.1 *et seq*.) requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on federal jurisdiction over some aspect of the project (e.g., dredge or fill activities in "waters of the US"). The administering agency is typically the USACE in coordination with the USFWS.

Migratory Bird Treaty Act of 1918. The Migratory Bird Treaty Act (16 U.S.C. §§ 703-711) includes provisions for protection of migratory birds, which prohibits the taking of migratory birds under the authority of the USFWS and CDFW.

Clean Water Act of 1977, Sections 401, 402, and 404. These sections of the Clean Water Act (33 U.S.C. §§ 1251 *et seq*., 33 C.F.R. §§ 320 and 323) gives the USACE authority to regulate discharges of dredge or fill material into waters of the US, including wetlands. Federal Clean Water Act (CWA) section 401 requires that every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification (Certification) that the proposed activity will comply with state water quality standards. Most Certifications are issued in connection with USACE section 404 permits for dredge and fill discharges. The State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Boards (RWQCB) have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. Section 401 Certifications are issued by the State or Regional Water Quality Control Boards.

CWA Section 402 establishes the NPDES permit program to regulate point source discharges of pollutants into waters of the United States. In California, the NPDES Program is a federal program delegated to the State of California for implementation through the SWRCB and the nine RWQCB. In California, NPDES permits are issued as waste discharge requirements (WDRs) that regulate discharges to waters of the United States. An NPDES permit sets specific

discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. Examples of pollutants include, but are not limited to, rock, sand, dirt, and agricultural, industrial, and municipal waste discharged into waters of the United States. See section 122.2 of 40 Code of Federal Regulations (C.F.R.) for the definitions of point source, pollutant, and water of the United States.

Additionally, the SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to "isolated" waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the USACE to be Outside of Federal Jurisdiction). The local RWQCB enforces actions under this general order.

State.

California Endangered Species Act of 1984. The California Endangered Species Act and implementing regulations in the Fish and Game Code, Section 2050 through Section 2098, include provisions for the protection and management of plant and animal species listed as endangered or threatened, or designated as candidates for such listing. The Act includes a consultation requirement "to ensure that any action authorized by a State lead agency is not likely to jeopardize the continued existence of any endangered or threatened species…or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (Fish and Game Code § 2090). Plants of California declared to be endangered, threatened, or rare are listed within the California Code of Regulations (C.C.R.) Title 14 Section 670.2. Animals of California declared to be endangered or threatened are listed at 14 C.C.R. Section 670.5. 14 C.C.R. §§ 15000 *et seq*. describes the types and extent of information required to evaluate the effects of a project on the biological resources of a project site.

California Species Preservation Act 1970: California Fish and Game Code §§ 900 – 903. This law includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California, and is administered by the CDFW.

California Fish and Game Code. The Fish and Game Code (FGC) provides specific protection and listing for several types of biological resources, including:

- *Fully Protected Species;*
- *Streams, rivers, sloughs, and channels;*
- *Significant Natural Areas; and*
- *Designated Ecological Reserves.*

Fully Protected Species are listed in Section 3511 (fully protected birds), Section 4700 (fully protected mammals), Section 5050 (Fully Protected reptiles and amphibians), and Section 5515 of the Fish and Game Code. The Fish and Game Code prohibits the taking of species designated as Fully Protected.

The Fish and Game Code Section 1600 requires a (Lake and) Streambed Alteration Agreement for any activity that may alter the bed and/or bank of a stream, river, or channel. Typical

activities that require a Streambed Alteration Agreement include excavation or fill placed within a channel, vegetation clearing, structures for diversion of water, installation of culverts and bridge supports, cofferdams for construction dewatering, and bank reinforcement.

The Fish and Game Code Section 1930 designates Significant Natural Areas. These areas include refuges, natural sloughs, riparian areas, and vernal pools and significant wildlife habitats. An inventory of Significant Natural Areas is maintained by the CDFW Natural Heritage Division and is part of the CNDDB. Section 1580 of the Fish and Game Code lists Designated Ecological Reserves. Designated Ecological Reserves are significant wildlife habitats to be preserved in natural condition for the general public to observe and study.

The Fish and Game Code Sections 2081(b) and (c) allow CDFW to issue an incidental take permit for a State listed threatened or endangered species only if specific criteria are met. These criteria can be found in Title 14 C.C.R., § 783.4(a) and (b). No Section 2081(b) permit may authorize the taking of "fully protected" species and "specified birds." If a project is planned in an area where a fully protected species or specified bird occurs, an applicant must design the project to avoid all takings; the CDFW cannot authorize takings under these circumstances. The Fish and Game Code Section 3503 specifies that it is unlawful to take, possess, or needlessly destroy the nest of any bird, except as otherwise provided by this code. Section 3503.5 specifies it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey), to take, possess, or needlessly destroy the nest of any such bird, except as otherwise provided by this code.

CEQA, Public Resources Code Section 2100 et seq., and CEQA Guidelines, Title 14 California Code of Regulations Section 15000 et seq. The CEQA Guidelines provide a framework for the analysis of impacts to biological resources. The administering agency is the CEQA Lead Agency, which is in this case Marin Clean Energy.

Native Plant Protection Act of 1977. The Native Plant Protection Act of 1977 and implementing regulations in Section 1900 et seq. of the Fish and Game Code designates rare and endangered plants and provides specific protection measures for identified populations. The Act is administered by the CDFW.

Public Resources Code Sections 25500 & 25527. These code sections prohibit the siting of development in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value. If there is no alternative, strict criteria are applied under the authority of the CDFW.

Local.

Richmond General Plan 2030: Element 7: Conservation and Natural Resources. The City of Richmond General Plan includes the Conservation Element which describes how the City will sustain a healthy network of open space and natural resources. The General Plan aims to preserve wildlife and plant communities, air, water, soils, minerals, energy, open space, and scenic views within the City of Richmond. The following applicable goals, policies, and actions are included in Element 7: Conservation and Natural Resources of the General Plan.

- *GOAL CN1: Preserved and Restored Natural Habitat and Biodiversity.* Continue to preserve and restore natural habitat and associated plants and wildlife including wetlands, baylands, riparian areas, oak woodlands and other sensitive biological resources. Take restoration efforts such as controlling invasive species, re-establishing natives, daylighting creeks and reclaiming priority conservation areas in order to maintain critical habitat and biodiversity. Carefully balance natural lands, habitat and protection of multiple species with the need to accommodate development.

- *GOAL CN2: Conserved Open Space.* Conserve open space to ensure that Richmond's expansive shoreline, network of parklands, trails, hillsides and undeveloped natural areas remain viable in supporting biological communities and providing sanctuary for future generations. Conserve open space, expand public access to open space, where appropriate, and acquire additional lands where feasible. Continue to protect surrounding hills and viewsheds as character-defining features that provide scenic backdrops, as well as publicly accessible trails and vistas.

- *GOAL CN3: Improved Water Quality.* Pursue a multi-jurisdictional approach to protecting, maintaining and improving water quality and the overall health of the watershed. A comprehensive, integrated approach would ensure compliance with federal and state standards, and address a range of interconnected priorities including: water quality and runoff; stormwater capture, storage and flood management techniques that focus on natural drainage; natural filtration and groundwater recharge through green infrastructure and habitat restoration; and water recycling and conservation.

- *Policy CN1.1 Habitat and Biological Resources Protection and Restoration.* Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources. Protect these areas and work with the California Department of Fish and Game [now CDFW], the San Francisco Bay Regional Water Quality Control Board, the East Bay Regional Park District and other regional agencies to identify areas for special protection and establish appropriate protection measures for these areas. Protect resources to maximize the efficacy of natural systems and encourage sustainable development practices and conservation measures to ensure a healthy natural environment. Protect wetlands from direct and indirect impacts of new and existing development and infrastructure. Ensure that direct and indirect impacts to wetland habitats are minimized by environmentally sensitive project siting and design. Protect marshlands and baylands to ensure they are not polluted or damaged from bay filling and dredging. Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas. Protect and restore creek corridors and riparian areas by restoring riparian habitat with appropriate vegetation and channel design; removing culverts and hardened channels where appropriate; improving creek access; avoiding future culverting or channelization of creeks; and ensuring appropriate and ongoing maintenance. At a minimum, require mitigation of impacts to sensitive species ensuring that a project does not contribute to the decline of the affected species populations in the region. Identify mitigations in coordination with the U.S. Fish and Wildlife service, the California Department of Fish and Game [now CDFW] and other regulatory agencies.

- *Policy CN1.2 Local Native Plant Species.* Promote the use of locally propagated native plant and tree species and remove and control the spread of invasive exotic plant species. Promote and protect native plant species in natural areas as well as in public landscaping of parks, schools, medians and planter strips. Work closely with landowners, landscapers and nurseries to remove and prevent the spread of invasive exotic plant species.

- *Action CN1.A Habitat Conservation.* Work closely with Contra Costa County, the East Bay Chapter of the California Native Plant Society (CNPS), and the East Bay Regional Park district to develop habitat conservation plans. Ensure that these plans identify locations and protect sensitive habitat including wetlands, marshes, baylands, creeks and open space. The plans should also establish clear mitigation criteria including no net losses in natural resource acreage, functions or values. The plan should provide for safe wildlife movement by limiting roadways within habitat areas, creating wildlife passable fencing for existing roadways, incorporating design features and by creating habitat preserves that are immediately adjacent to each other.

- *Action CN1.B Priority Conservation Areas.* The City will identify areas of the City with significant natural habitat, open space and recreation resources and promote conservation, preservation and environmental rehabilitation.

- *Action CN1.E Habitat Restoration.* Work with other jurisdictions, public and private property owners to restore sensitive habitat that has been degraded, but has potential for rehabilitation including brownfield and contaminated sites. Seek funding opportunities from state and federal agencies and from nonprofit foundations for restoration and remediation work.

- *Policy CN3.2 Water Quality.* Work with public and private property owners to reduce stormwater runoff in urban areas to protect water quality in creeks, marshlands and water bodies and the bays. Promote the use of sustainable and green infrastructure design, construction and maintenance techniques on public and private lands to protect natural resources. Incorporate integrated watershed management techniques and to improve surface water and groundwater quality, protect habitat and improve public health by coordinating infrastructure and neighborhood planning and establishing best practices for reducing non-point runoff.

4.1.2 Impact Analysis

a. Methodology and Significance Thresholds. Analysis of the proposed project's biological impacts consisted of our January 20, 2015 field survey of the project site, along with a review of available relevant biological databases, literature and agency documents followed by a field reconnaissance survey of the site on January 26, 2015. The review of biological databases included occurrence records for:

1. Special status plant species contained in the CNPS Inventory of Rare and Endangered Plants (http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi);

2. Special status plant and animal species, and sensitive terrestrial natural communities) contained in the CNDDB, BIOS and Rare Find Version 5 (https://www.dfg.ca.gov/biogeodata/cnddb); and
3. Geographic distributions of federally listed species and federally designated critical habitat from the USFWS Critical Habitat Portal (http://criticalhabitat.fws.gov).

We also reviewed the USFWS National Wetlands Inventory (NWI; http://wetlands.fws.gov) to determine if any potentially jurisdictional wetland and non-wetland waters of the U.S. and/or State of California had been previously documented and mapped on or within one mile of the proposed solar project site. Database searches were focused within the San Quentin and Richmond, California 7.5-minute topographic quadrangles.

Evaluation Criteria. The following impact thresholds are based on Appendix G of the *State CEQA Guidelines*. Impacts are considered significant if the proposed project would result in any of the following:

a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service;
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service;
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

As stated in the Initial Study (see Appendix A), the project would not result in significant impacts related to local policies or ordinances protecting biological resources or resulting from conflicts with the provisions of an adopted conservation plan (items e and f). Thus the analysis focuses on impacts under items a through d and impacts under items e and f will not be studied further.

b. Project Impacts and Mitigation Measures.

Threshold:	*Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?*

Impact BIO-1 Of five natural communities present within the vicinity of the project site, four of these, along with the nearby riparian habitat, would not be adversely affected by the proposed project. However, project construction could potentially impact the "sensitive" purple needlegrass, natural community on the site. Potential impacts on this sensitive natural community would be considered Class II – *significant but mitigatable*.

The database review identified five natural communities within the vicinity of the project site: Coastal Terrace Prairie; Northern Coastal Salt Marsh; Northern Maritime Chaparral; Serpentine Bunchgrass; and Valley Needlegrass Grassland. As discussed under *Existing Site Conditions*, areas containing North Coast Salt Marsh and jurisdictional habitat associated with freshwater emergent marsh are located within 100 feet (see Figure 4.1-1). However, while close to the project site, they are separated by existing paved access roads. No project disturbance in these areas is proposed as part of the project design. Since both the North Coast Salt Marsh and freshwater emergent marsh are outside the project area and buffered by existing paved roads and associated disturbed road shoulders, no direct or indirect impacts to these sensitive communities are anticipated.

The purple needlegrass community along the southeast corner of the landfill occurs in sufficient density to be considered Valley Needlegrass Grassland – a CDFW sensitive natural community. This community occurs on a raised berm that is unsuitable for solar panel installation and the project has been designed to avoid development in this area. Without appropriate safeguards (BMPs) however, construction activities could adversely affect this sensitive community from staging, laydown, and storage activities, as well as vehicle travel and/or human trampling – all of which could be considered a significant impact.

Coastal Terrace Prairie, Northern Maritime Chaparral and Serpentine Bunchgrass were not observed within the project boundaries or in the immediately adjacent areas and would not be adversely affected by project activity.

Mitigation Measures. The following mitigation measure is required to reduce potential impacts to Valley Needlegrass Grassland during construction activities to a less than significant level.

BIO- 1 A highly visible barrier fence or flagging shall be installed around the identified Valley Needlegrass Grassland community to prevent equipment and employee movement through the community. This fence or flagging shall be installed prior to the onset of grading or construction, maintained throughout project activities, and removed following project completion.

Significance After Mitigation. With the implementation of mitigation measure BIO-1, impacts to Valley Needlegrass Grassland community would be reduced to a less than significant level.

Threshold:	*Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.*
Threshold:	*Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*

Impact BIO-2 The project site does not contain suitable habitat for special-status plant species. However, the project site contains habitat that could support burrowing owl and/or other nesting birds protected under state and federal law. Construction of the proposed project could result in direct or indirect effects to burrowing owl and nesting bird species that could be present on or near the site during construction. Impacts on sensitive species would be considered Class II – *significant but mitigable*.

The project site consists predominantly of highly disturbed non-native annual grassland and associated ruderal areas, with an isolated area of Valley Needlegrass Grassland habitat and a centrally located canal and adjacent Northern Salt Marsh community. Project development impacts are restricted to the ruderal and non-native grassland portions of the site. The canal and associated marsh habitat is outside of the proposed development areas, and the Valley Needlegrass Grassland habitat is being avoided through project design and protections as discussed in Impact BIO-1 above. Most special-status plant and wildlife species are not expected to occur within the highly disturbed project area, and those that may occur have a low probability of being adversely affected by the proposed project. However, ruderal habitat and non-native grassland could support breeding and wintering burrowing owls if man-made structures (i.e. culverts, debris piles, open foundations, etc.) or ground squirrel, jackrabbits or other large rodent burrows are occupied by owls or available for occupation on the project site at the time of construction. The existing disturbance, lack of natural vegetation communities, and regular activity associated with the existing Chevron refinery reduce the likelihood for nesting by burrowing owl; however, the potential for nesting by this species cannot be completed eliminated. Therefore, there is a low potential to support nesting and/or wintering burrowing owls. Construction activity – including grading, clearing and excavation, along with associated construction noise and travel – could directly (injure or kill) and/or indirectly (encourage nest or winter burrow abandonment) impact nesting or wintering burrowing owls if present onsite during construction.

The project site and adjacent wetlands also provide suitable nesting habitat for a number of birds protected under the MBTA and FGC. The MBTA makes it unlawful at any time, by any means, or in manner, to pursue, hunt, take, capture, or kill migratory birds. The law applies to the removal of any and all nests that are occupied by migratory birds during the nesting season. Furthermore, California Fish and Game Code Section 3500 prohibits the destruction of any nest, egg, or nestling. A number of species may nest within or adjacent to the project site, including

but not limited to white crowned sparrow, song sparrow, killdeer, horned lark, mourning dove, Eurasian collard dove, house finch, Anna's hummingbird, and California towhee; therefore, implementation of the proposed project could result in direct (destruction of a nest; injury or mortality of individual birds) or indirect (nest abandonment from noise and human presence) impacts to nesting bird species should they be present within the project site and/or immediate surrounding vicinity at the time of construction. Direct and indirect impacts to nesting birds and burrowing owl are potentially significant; mitigation measures are required to reduce impacts to a less than significant level.

Non-native grassland provides marginal foraging habitat for some species including white-tailed kite, burrowing owl, and northern harrier. The project site represents a small portion of the non-native grassland habitat available to these species along the shores of the San Pablo Bay and San Rafael Bay and inland. The permanent loss of the marginal non-native grassland habitat within the project site represents poor quality raptor foraging habitat and is a small and non-significant percentage of all suitable foraging habitat present within the broader San Francisco Bay region. Furthermore, based on the limited observations of burrowing owl, northern harrier, short-eared owl and white-tailed kite within the vicinity of the project site over the last five years, the loss of habitat on the project site is unlikely to adversely affect regional population numbers or contribute towards a trend to federal or state listing, or to the loss of viability to any special status population or species.

Mitigation Measures. The following mitigation measures are required to reduce potential impacts to nesting birds and burrowing owl to a less than significant level.

BIO– 2(a) Avoid Nesting Bird Season. Direct disturbance (clearing/grading/vegetation removal) to nesting habitat shall be conducted between September 16 and January 31, outside of the nesting bird breeding season, to the greatest extent possible. No preconstruction nesting bird surveys would be required for construction occurring during the non-breeding season. Removal of potential nesting habitat during the non-breeding season would prevent mated pairs from nesting in proposed disturbance areas.

BIO-2(b) Pre-Construction Nesting Bird Surveys. If direct disturbance (clearing/grading/vegetation removal) to nesting habitat is unavoidable during the bird breeding season (February 1 to September 15), a qualified biologist shall conduct pre-construction surveys for nesting birds and general avian activity in all areas within 500 feet of proposed disturbance areas, where accessible, prior to any site disturbance (i.e., mobilization, staging, grading, or construction). If active nests are found, they shall be protected with a minimum 100-foot no-work buffer for songbirds and 500-foot buffer for raptors. These buffers could be adjusted according to existing noise, topography, or disturbance conditions. Buffer zones would be designated in the field in various ways, including flagging, fencing, and/or signage.

Surveys shall be completed no more than 14 days prior to ground disturbance and vegetation removal. If buffers and follow-up monitoring are required, the qualified biologist shall submit a monthly monitoring report identifying active nests, monitoring results, and condition of buffer zones. Reports can be combined with other reporting requirements where appropriate.

BIO-2(c) **Pre-Construction Burrowing Owl Surveys**. A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct pre-construction clearance surveys prior to ground disturbance activities (e.g., vegetation clearance, grading, tilling) within all suitable habitat to confirm the presence/absence of burrowing owls (maybe conducted concurrently with BIO-1(b)). The survey methodology shall be consistent with the recommended methods outlined in the 2012 CDFW Staff Report on Burrowing Owl Mitigation. Clearance surveys shall be conducted within 14 days prior to construction and ground disturbance activities. If no burrowing owls are observed, no further actions are required.

If burrowing owls are detected on-site, no ground-disturbing activities shall be permitted within a buffer of no fewer than 100 meters (330 feet) from an occupied burrow during the breeding season (February 1 to August 31), unless otherwise authorized by CDFW. During the non-breeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow. Depending on the level of disturbance, a smaller buffer may be established in consultation with CDFW.

If avoidance of active burrows is not feasible during the non-breeding season, then, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping, a qualified biologist shall implement a passive relocation program in accordance with the CDFW 2012 Staff Report on Burrowing Owl. If passive relocation is required, a qualified biologist shall prepare a Burrowing Owl Exclusion and Mitigation Plan in accordance with CDFWs 2012 Staff Report on Burrowing Owl Mitigation and for review by CDFW prior to passive relocation activities. The Plan shall include all necessary measures to minimize impacts to burrowing owls during passive relocation, including all necessary monitoring of owls and burrows during passive relocation efforts. Relocation of owls can only occur during the non-breeding season.

Significance After Mitigation. Mitigation measure BIO-2(a) would prevent birds from nesting in the project area and being disturbed. In the event that direct disturbance of the area is unavoidable during the nesting season, mitigation measure BIO-2(b) would ensure that active nests receive adequate protection. Mitigation measure BIO-2(c) would prevent direct impacts to breeding burrowing owl. In the event that direct disturbance to non-breeding burrowing owls is unavailable, mitigation measure BIO-2(c) would ensure that individual owls are passively relocated away from project area. With the implementation of these measures, impacts would be reduced to a less than significant level.

Threshold:	*Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

Impact BIO-3 Project related construction and operation would occur outside any potentially jurisdictional wetland and "other waters of the U.S." or waters for the State within the project area and no direct impacts to these waters would occur. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared according to NPDES requirements prior to construction. Potential indirect impacts to ambient water quality from ground disturbance related to construction would be considered Class II – *significant but mitigatable.*

Wetland and non-wetland waters occur outside the project area and are separated from proposed project activities by at least 90 feet. No alterations to the constructed swale on the evaporation pond site are proposed. As designed, the swale would not be eliminated and storm waters that fall within the evaporation pond site would not be redirected. Consequently, wetland and non-wetland waters would not be directly affected by project construction or operation. However, project related ground-disturbance activities could adversely affect water quality of surrounding waters through inadvertent discharge of materials or runoff containing sediment and/or pollutants. As described further in Section 4.3, *Hydrology and Water Quality*, the project would comply with National Pollution Discharge Elimination System (NPDES), including preparation of a SWPPP. Implementation of Best Management Practices (BMPs) over and above those required under the NPDES and proposed in the project SWPPP would control sedimentation and runoff to reduce potentially significant impacts to a less than significant level. As noted above, the project site is located within the Chevron Refinery, certain projects and operations of which are subject to the mitigation measures outlined in the Chevron Refinery Modernization Project EIR (certified in July of 2014 by the City of Richmond). That EIR identified potential impacts related to stormwater runoff into to the marsh areas as a result of solar development on the project site, and included its Mitigation Measure BIO-1 to address these impacts. Mitigation Measure BIO-3 below is consistent with Measure BIO-1 of the Modernization Project EIR.

Mitigation Measures. The following mitigation measure is required to reduce impacts to water quality in the wetland and non-wetland waters by controlling sediments and runoff on the project site.

BIO- 3 Stormwater Control Measures. The following best management practices (BMPs) shall be implemented throughout construction activities and/or as part of project design.

- The Facility shall provide environmental awareness training for all construction personnel to address potential impacts to wetlands and waters of the US and State.

- Bright-colored fencing and signage shall identify and restrict construction within environmentally sensitive areas.
- A construction monitor/environmental inspector shall confirm the fence integrity on a daily basis to protect the area from accidental equipment damage.
- Any and all necessary fence repair and/or reinforcements shall be completed immediately.
- Temporary perimeter silt fencing shall be installed where storm water runoff and non-storm water discharges could flow into surrounding marshes.
- Placement of exclusion fencing 5–10 feet from the perimeter of the coastal brackish marsh boundary or on the edge of the temporary disturbance area when this distance is greater.
- Temporary straw wattles, sand bags, or water velocity dissipaters shall be installed around concrete drainage channels to prevent sediment from entering channels and storm drains.
- Ground disturbance and vegetation grubbing shall be minimized and limited to the area required to complete project activities.
- Bare ground exposed or inactive for more than 14 days shall be stabilized or re-vegetated to prevent erosion. Following project completion all areas of bare ground shall be stabilized or re-vegetated prior to termination of installation activities.
- Entrances and exits onto the landfill and evaporation pond sites shall be stabilized to prevent sediments from being tracked off site.
- Staging or storing of equipment and materials shall occur onsite or on existing paved surfaces and shall be covered or contained within appropriate secondary containment to prevent pollutants from running off site or onto the ground.
- BMPs shall be installed prior to initiation to work and all temporary BMPs shall be removed following project completion.

Significance After Mitigation. By implementing the Best Management Practices outlined in Mitigation Measure BIO- 3, impacts to wetland and non-wetland waters would be reduced to a less than significant level.

c. Cumulative Impacts. A description of the cumulative analysis methodology is included in Section 3.0, *Environmental Setting*, of this EIR. Cumulative development includes all development within Chevron Richmond Refinery facility and in the Richmond General Plan. Significance for cumulative impacts to biological resources is based upon:

- *The cumulative contribution of other approved and proposed development to fragmentation of open space in the project site's vicinity;*
- *The loss of sensitive habitats and species;*

- *Contribution of the proposed project to urban expansion into natural areas; and*
- *Isolation of open space within the proposed project by future projects in the vicinity.*

The project's impacts on biological resources have been determined in this section of the EIR to be less than significant with mitigation. The project site was previously developed and no biological habitats or special status species would be significantly impacted with implementation of mitigation measures as described above. The site is located within Chevron Richmond Refinery, a developed industrial area. With mitigation implemented, the project would not cause open space fragmentation in the site's vicinity as the site's vicinity is already developed with industrial uses, lead to a loss of sensitive habitats and species, contribute to proposed urban expansion into natural areas, or isolate open space. Therefore, cumulative impacts to biological resources would be less than significant with implementation of project mitigation measures.

4.2 HAZARDS AND HAZARDOUS MATERIALS

4.2.1 Setting

a. Hazards Associated with Historical Uses. The 60-acre project site is owned by the Chevron Products Company. Approximately 40 acres of the western portion of the project site is a closed landfill (Landfill 15; see Figure 2-7 in Section 2.0, *Project Description*). A fertilizer plant (demolished in 1995) and evaporation ponds (filled and compacted between 2000 to 2003) were located on the remaining 20 acres on the eastern portion of the project site (see Figure 2-6). Potential hazards associated with these uses are discussed below.

Landfill 15. An approximately 40-acre portion of the project site formerly operated as an evaporation pond and landfill from the early 1960s to 1987. The landfill received a variety of wastes, including sludges (separator, paint, and water treatment), oily soils and dredge spoils, resins, catalyst fines, lime, and sulfur. In 1992, treated non-hazardous acidic sludge and dredged bay mud generated from the closure of the Pollard Landfill (northwest of the refinery, adjacent to San Pablo Bay) was disposed over 13 acres of this landfill site (RWQCB, 2011a). In 1995, the 13-acre area that received waste from the Pollard Landfill was closed and capped with vegetation. During 1996 and 1997, the remaining 28 acres of the landfill was closed and capped with vegetation (19.5 acres) or asphalt/concrete (8.5 acres; immediately adjacent to the western boundary of the project site, where the construction laydown yard is proposed). The final cover over the landfill area within the project boundary is composed of a layer of 40-mil HDPE membrane covered by 12 inches of vegetated fill in the non-paved areas (ARCADIS, 2012). A methane gas collection and vent system, along with surface drainage control facilities, were constructed with the cover to protect groundwater resources, control methane emissions, and control stormwater (Dames & Moore, 1998). The primary hazards in this area are residual waste chemicals in the soil and methane emissions from buried waste decomposition.

The site is managed under Regional Water Quality Control Board (RWQCB) Order No. R2-2012-0015, which requires the area within the Landfill 15 boundary and the receiving waters to be monitored quarterly to report the condition of final covers and stormwater management system elements, evidence of ponded water, odors, erosion, day lighted waste, and floating/suspended materials of waste origin or discoloration/turbidity in receiving waters. The site must be inspected by a registered California engineer/geologist annually, prior to onset of rainy season, to identify damaged areas from erosion, rodents, or otherwise. Groundwater monitoring must also occur on a semi-annual basis to measure water levels and analyze groundwater for field measurements and site-specific constituents of concern as listed in the Order.[1]. Landfill alterations or equipment installation must be in accordance with Order No. R2-2012-0015 and may not negatively impact the cap, GPS, landfill gas collection and vent system, and existing stormwater conveyance.

Former Fertilizer Plant and Ponds (FFPP). A 20-acre portion on the eastern side of the project site formerly contained a fertilizer plant and fertilizer evaporation ponds. The plant and ponds were built in 1959 for nitrogen-based fertilizer manufacturing. The plant was demolished

[1] *This includes approximately 35 constituents, including benzene, MTBE, arsenic, cadmium, lead, mercury, and others.*

in 1995 and the area was covered with clean fill and asphalt base. The ponds were filled with approximately eight feet of clean fill during 2000 to 2003. The plant area is currently a relatively flat gravel and vegetated surface covering approximately 15 acres and the pond area is a 20-acre vegetated field. Residual metals in the soil are the primary hazard in this area, and include: arsenic, beryllium, cadmium, and cobalt.

While an oversight agency was not specifically identified for the FFPP area; a Hydraulic Containment System (HCS) related to the surrounding area known as the "Pond Site" is managed under RWQCB Order No. R2-1997-0049. The engineered HCS controls and monitors (?) groundwater migration at the Pond Site and consists of a hydraulic control trench and containment wall, which surrounds the adjacent Integrated Wastewater Pond System (IWPS) and FFPP area (along the southern, eastern, and western boundaries). The hydraulic control trench consists of a two-foot wide trench filled with granular material and slotted drain pipes near the base of the trench, which collects and conveys groundwater to sumps with extraction pumps spaced at 500-foot intervals along the trench (ARCADIS, 2009). From 1980 to 1983, a asphalt emulsion, sand, cement, and water (Aspemix) barrier wall was constructed to the east and west of the FFPP area to connect to a pre-existing clay barrier installed in 1973 and 1974. In 1991, a bentonite-soil slurry barrier was installed to the south and east of the FFPP area (RWQCB, 1997).

RWQCB Order No. R2-1997-0049 also requires quarterly on-site ground- and surface-water monitoring (with semi-annual reporting) in Castro Creek. Required information in these reports includes a tabulation of groundwater elevation data, groundwater and surface water chemical data, groundwater elevation contour maps, an evaluation of leachate collection system operation, and a summary of compliance-related information (Leidos Engineering, 2014).

b. Other Potential Hazards.

Hazardous Materials Transport. The proposed project may require transport of hazardous materials during construction and/or operation (e.g., fuel for construction equipment, oil, solvents, or paints) along I-580, Richmond Parkway, and Castro Street, with the existing access gate from Hensley Road just off Castro Street as the main construction access point.

Utilities. The project site is also served by existing utilities that serve the larger Chevron Richmond Refinery. A Chevron-owned electrical substation is immediately adjacent to and west of the project site and a 12.47 kilovolt (kV) Pacific Gas & Electric (PG&E) overhead distribution line is adjacent to the project site along Castro Street and connects to 12 kV overhead distribution lines on the project site. Underground utilities on the project site are limited as the project site contains a capped landfill and filled fertilizer evaporation ponds. However, the project site does contain a surface-level methane gas collection and vent system on the landfill site as well as surface drainage control facilities.

Electromagnetic Fields (EMFs). EMFs are common in nature and produced by all living organisms. Concern over EMF exposure, however, generally pertains to human-made sources of electromagnetism and the degree to which they may have adverse biological effects or interfere with other electromagnetic systems. Possible health effects associated with exposure to EMFs have been the subject of scientific investigation since the 1970s. Reviews of the scientific

literature have consistently indicated insufficient evidence of an association between EMF exposure and adverse health effects in humans (National Institute of Environmental Health Science [NIEHS], 2002; World Health Organization [WHO], 1984, 1987, 2001, 2007, 2011).

On January 15, 1991, the California Public Utilities Commission (CPUC) initiated an investigation to consider its role in mitigating the health effects, if any, of electric and magnetic fields from utility facilities and power lines. The CPUC ultimately concluded that it is not appropriate to adopt any specific numerical standard in association with EMF until there is a firm scientific basis for adopting any particular value. This continues to be the stance of the CPUC with regard to establishing standards for EMF exposure. Currently, the State has not adopted any specific limits or regulation on EMF levels related to electric power facilities. For these reasons, EMF is not considered in this EIR as a relevant CEQA issue and no impact significance is discussed. This information is instead presented to allow understanding of the issue by the public and decision-makers.

d. Sensitive Receptors. Sensitive receptors are generally characterized as populations that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. The project site is located in an industrial area of Richmond that includes uses such as oil refining operations, energy producing facilities, railroad operations, and storage and manufacturing facilities. The nearest sensitive receptors are residences to the northeast, along Vernon Avenue, that are approximately 0.25 miles from the site. Peres Elementary School is located approximately 0.45 miles east of the site (across Richmond Parkway).

e. Regulatory Setting. Hazardous material and waste management is regulated at the federal, state, and local levels through programs administered by the U.S. Environmental Protection Agency (U.S. EPA), agencies within the California Environmental Protection Agency (CalEPA), such as the DTSC, federal and state occupational safety agencies, the Bay Area Air Quality Management District (BAAQMD), Contra Costa Health Services Department, and City of Richmond.

Federal. The U.S. EPA is responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. The federal regulations are codified primarily in Title 40 of the Federal Code of Regulations. The primary legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Emergency Planning and Community Right-to-Know Act (SARA Title III). These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, transport, or dispose of hazardous materials.

The Hazardous Materials Transportation Act of 1975 (HMTA) is the major transportation-related statute regulating the transportation of hazardous cargo. The HMTA empowers the U.S. Department of Transportation with regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce. For materials that are designated as hazardous, specific requirements

pertaining to packaging, labeling, and transportation apply to any person or business transporting a hazardous material.

The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. OSHA requires training for hazardous materials operators, which includes personal safety, hazardous materials storage and handling procedures, and emergency response procedures.

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq., formerly the Federal Water Pollution Control Act of 1972), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. As part of the CWA, the U.S. EPA oversees and enforces the Oil Pollution Prevention regulation contained in Title 40 of the CFR, Part 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans. A facility is subject to the SPCC regulations if a single oil (or gasoline, or diesel fuel) storage tank on-site has a capacity greater than 660 gallons, or the total above ground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "Navigable Waters" of the United States.

Other relevant federal laws include the federal Toxic Substances Control Act of 1976 (TSCA) and RCRA. TSCA and RCRA established a program administered by the U.S. EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes.

State. In California, the DTSC is authorized by the U.S. EPA and CalEPA to enforce and implement federal hazardous waste laws and regulations. Requirements place "cradle-to-grave" responsibility for hazardous waste disposal on the shoulders of hazardous waste generators. Generators must ensure that their wastes are disposed of properly, and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills).

California regulations pertaining to hazardous materials equal or exceed federal regulations. In January 1996, CalEPA adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program governing (1) hazardous waste generators and hazardous waste on-site treatment, (2) underground storage tanks, (3) above-ground storage tanks, (4) hazardous materials release response plans and inventories, (5) risk management and prevention programs, and (6) Unified Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a designated local agency – the Certified Unified Program Agency (CUPA). The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction. The Contra Costa County Health Services Department is the designated CUPA for the County of Contra Costa, including all cities and unincorporated areas within the County.

State laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

Along with DTSC, the RWCQB, which operates under the jurisdiction of CalEPA, is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. RWQCB regulations applicable to hazardous materials are contained in Title 27 of the California Code of Regulations (CCR). Additional state regulations applicable to hazardous materials are contained in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

Transportation of hazardous materials and wastes is regulated by Title 26 of the CCR. Caltrans is the primary regulatory authority for the interstate transport of hazardous materials and establishes safe handling procedures for packaging, marking, labeling, routing, etc. The California Highway Patrol (CHP) and Caltrans enforce federal and state regulations and respond to hazardous materials transportation emergencies.

A "Uniform Hazardous Waste Manifest" is required by DTSC and must accompany most hazardous waste before transportation off site. The manifest travels with the hazardous waste from the point of generation, through transportation, to the final treatment, storage and disposal facility. If a discharge or spill of hazardous waste occurs during transportation, the transporter is required to take appropriate immediate action to protect human health and the environment (i.e., notify local authorities, dike the discharge area), and shall be responsible for the discharge/cleanup, pursuant to Title 22 of the CCR, Sections 66263.30 and 66263.31.

With respect to worker safety regulations at the state level, the California Department of Industrial Relations, Division of Occupational Safety and Health, formerly known as Cal/OSHA, is charged with enforcement of state regulations and supervision of workplaces in California that are not under direct federal jurisdiction. State worker health and safety regulations applicable to construction workers include training requirements for hazardous waste operations and emergency response, all of which equal or exceed their federal counterparts.

Although there are numerous state policies dealing with hazardous waste materials, the most comprehensive is the Tanner Act (Assembly Bill [AB] 2948) adopted in 1986. The Tanner Act governs the preparation of hazardous waste management plans and the siting of hazardous waste facilities in the state. The act also mandates the adoption of a Hazardous Waste Management Plan by every county that must include provisions defining: (1) the planning process for waste management; (2) the permit process for new and expanded facilities; and (3) the appeal process to the state available for certain local decisions.

CPUC General Order (GO) 95, *Rules for Overhead Electric Line Construction,* is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in California. It was adopted in 1941 and updated most recently in 2006. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. GO 95: Rule 35, Tree Trimming, defines minimum vegetation clearances around power lines. Rule 35 guidelines require 10 feet radial clearances for any conductor of a line operating at 110,000 volts or more, but less than 300,000 volts. This requirement would apply to the proposed 230 kV line. GO 95: Rule 31.2, Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

Public Resources Code (PRC) 4292, *Powerline Hazard Reduction,* requires a 10-foot clearance of any tree branches or ground vegetation from around the base of power poles carrying more than 110 kV. The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower to which a switch, fuse, transformer or lightning arrester is attached, and surrounding each dead-end or corner pole, unless such pole or tower is exempted from minimum clearance requirements by provisions of PRC 4296.

PRC 4293, *Powerline Clearance Required,* presents guidelines for line clearance including a minimum of 10-feet of vegetation clearance from any conductor operating at 110,000 volts or higher.

In order to protect public health and safety and the environment, the California Office of Emergency Services (OES) is responsible for establishing and managing statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and health risks) needs to be available to firefighters, public safety officers, and regulatory agencies and needs to be included in business plans in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment. These regulations are covered under Chapter 6.95 of the California Health and Safety Code Article 1–Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2–Hazardous Materials Management (Sections 25531 to 25543.3). CCR Title 19, Public Safety, Division 2, OES, Chapter 4–Hazardous Material Release Reporting, Inventory, and Response Plans, Article 4 (Minimum Standards for Business Plans) establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP). These plans shall include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in California. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following: 500 pounds of a solid substance; 55 gallons of a liquid; 200 cubic feet of compressed gas; a hazardous compressed gas in any amount; hazardous waste in any quantity.

Regional. Regarding hazardous air emissions, the BAAQMD implements the federal National Emission Standards for Hazardous Air Pollutants (NESHAP) and Maximum Achievable Control Technology (MACT) requirements through the federal operating permit program, pursuant to Regulation 2, Rule 2, New Source Review. In addition, BAAQMD's permitting program includes a "Best Available Control Technology for Toxics" (TBACT) review under BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. This rule provides preconstruction review for potential health impacts from new and modified sources of toxic air contaminants.

In compliance with state law, the BAAQMD also administers the AB 2588 Air Toxics "Hot Spots" Program. Facilities must report their toxic air contaminant emissions and if the BAAQMD determines the facility poses a potential public health risk, the facility must perform a health risk assessment (HRA). An HRA includes an analysis of toxic air contaminant emissions and characterizes human health risks as a result of the estimated exposures. If the estimated health risks exceed threshold levels, the public in the affected area must be notified and steps taken to reduce emissions.

Contra Costa County. The Contra Costa County Health Services Department is designated by CalEPA as the CUPA within the geographic boundaries of the County and is responsible for enforcing the local ordinance and state laws pertaining to use and storage of hazardous materials as described previously, including the issuance and administration of Hazardous Materials Management Plans (HMMPs).

City of Richmond. Chapter 6.43, Industrial Safety, of the Richmond Municipal Code (RMC) imposes regulations which supplement the requirements of California Health and Safety Code, Article 2, Section 25531 et. seq. concerning hazardous materials management. The RMC enacts measures to prevent and reduce the probability of accidental releases of regulated substances that have the potential to cause significant harm to the public health and increase participation by industry and the public to improve accident prevention. These measures include submission of a safety plan to the City, stringent requirements for the contents of a safety plan and safety program, public review of the safety plan, authorization for the City to require changes in the safety plan or safety program, an expansion of the list of regulated substances beyond those covered by the Federal and State Accidental Release Prevention Program regulations and authorization for the City to expand audits and inspections to all units within the stationary source.

Chevron Products Company. Chevron maintains an Emergency Response Program which is reviewed annually by the Manager of the Chevron Fire Department. The program addresses all aspects of emergency response, including proper first-aid and medical treatment for exposures, evacuation plans and accounting for personnel after an evacuation, notification of local emergency response agencies and the public in the event of a release, and post-incident cleanup and decontamination requirements. As part of the Chevron Refinery Modernization Project EIR (certified in July of 2014 by the City of Richmond), mitigation was required to update the ERP (Mitigation Measure 4.13-11a). The Chevron Refinery Modernization Project EIR also required the implementation of mitigation measures related to the control of on-site hazardous materials and other public safety issues.

4.2.2 Impact Analysis

a. Methodology and Significance Thresholds. The following thresholds are based on Appendix G of the *State CEQA Guidelines*. A significant impact would occur if the proposed project would result in any of the following conditions:

1. *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;*
2. *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;*
3. *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school;*
4. *Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;*
5. *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;*
6. *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;*
7. *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or*
8. *Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.*

Certain criteria were eliminated from further evaluation in the Initial Study (Appendix A). The project site is not within one-quarter mile of an existing school. The closest school is the Peres Elementary School located approximately 0.45 miles away. In addition, there is no public airport within two miles of the project site and no private air strips are within the vicinity of the project site. Therefore, there would be no impacts related to hazards near schools, airports, and private air strips. In addition, the project site is not within a wildland fire hazard area. Further discussion regarding thresholds 3, 5, 6, and 8 can be found in the Initial Study (Appendix A).

As stated in Section 2.0, *Project Description*, at the end of the project's useful life (anticipated being 30 years or more), the proposed solar facility and associated infrastructure may be decommissioned. Given the project's operating life cycle and distant timeframe for decommissioning activities, it is too speculative to provide details in this EIR describing specific decommissioning activities and potential impacts that could occur far into the future. As such, this EIR evaluates decommissioning based on current standard decommissioning practices, which include dismantling and repurposing, salvaging/recycling, or disposing of project components, and site restoration. MCE may conduct additional CEQA review to ensure compliance with requirements related to hazards and hazardous materials management during decommissioning.

b. Project Impacts and Mitigation Measures.

Threshold:	*Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.*

Impact HAZ-1 The majority of project site disturbance would occur in an area historically used as a landfill and fertilizer pond. Impacts related to exposure to chemicals remaining in on-site soils would be Class II – *significant but Mitigable*.

The project site is a part of the Chevron Richmond Refinery property. Approximately 40 acres of the project site contain a capped landfill and the remaining 20 acres consist of filled fertilizer evaporation pond. Residual chemicals or heavy metals may be present in these areas. Construction workers could be exposed to these chemicals should ground-disturbing activities occur during grading and construction.

Phase I would involve installation of a 2 MW non-penetrating, ballasted, fixed-tilt PV array on the landfill area (approximately 13 acres of the 40 acre landfill). Phase 2 would include installation of a 5 MW non-penetrating, ballasted, fixed-tilt PV array on the additional landfill area (27 acres of the 40 acre landfill). The panels on the landfill areas in both Phase I and Phase 2 would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows. The pads would be placed above ground and would not involve ground disturbance so as not to penetrate or otherwise jeopardize the cap. Therefore, the likelihood that construction workers or operational staff working on this portion of the project site could be exposed to residual chemicals in soils under the landfill cap is minor.

Single axis tracking arrays would be installed on the 20-acree FFPP site during Phase 2 of the project (see Figure 2-8 in Section 2.0, *Project Description*). These arrays would extend from at least 30 inches above grade to a maximum height of 14 feet in its highest position. No cover, line, or cap exists at this site. The fertilizer ponds were filled and compacted with clean fill and asphalt base. Although installation of the tracking arrays on the FFPP portion of the project site would involve ground disturbance to a depth of six feet, nine inches – as this area contains clean, compacted fill – the likelihood that construction workers or operational staff could be exposed to residual chemicals in on-site soils is minor. In addition, pole-mounting would involve pile-driving or a similar technique that would minimize the area of soil disturbance.

The proposed project would utilize existing electrical poles on the site and would add new poles and 12 kV overhead electrical wires, as needed, outside the southern edge of the landfill and FFPP site and therefore would not involve any ground disturbance on the landfill or FFPP areas (See Figures 2-6 and 2-7 in Section 2.0, *Project Description*). Phase 1 inverters and transformers would be located on the southeast corner of the landfill area (see Figure 2-7) and would be mounted on concrete pads so as not to disturb the landfill cap. The Phase 2 equipment pads would be located on the western boundary of the FFPP area (see Figure 2-6). These equipment pads would also be mounted on concrete. Therefore, the likelihood that construction

workers or operational staff could be exposed to residual chemicals in on-site soils during installation of electrical equipment is minor.

Lastly, the proposed project would not impact the HCS north of the project site.

As discussed above, the project site is located within the Chevron Refinery, certain projects and operations of which are subject to the mitigation measures outlined in the Modernization Project EIR. In addition, the proposed project is subject to the requirements outlined in RWQCB Order No. R2-2012-0015. Mitigation measures HAZ-1(a) and HAZ-1(b) would ensure that activities under the proposed project are consistent with remediation programs ongoing at the site and discussed in Modernization Project EIR.

Mitigation Measures. The following mitigation measures are required.

HAZ-1(a) Prior to issuance of building permits, the applicant shall submit for City of Richmond review the design of the 10.5MW facility, and sufficient information about construction and operation parameters as are determined by City and/or RWQCB to be needed to assure that the solar project would not reduce the effectiveness of the remediation measures currently implemented in the solar site area.

HAZ-1(b) Prior to issuance of building permits, the landowner (Chevron) shall submit for RWQCB review the design of the 10.5MW facility, and sufficient information about construction and operation parameters as are determined by City and/or RWQCB to be needed to assure that the solar project would not reduce the effectiveness of the remediation measures currently implemented in the solar site area.

Significance After Mitigation. Impacts would be less than significant with implementation of Mitigation Measures HAZ-1(a) and HAZ-1(b).

Threshold:	*Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.*
Threshold:	*Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.*

Impact HAZ-2 Construction, operation, and decommissioning activities would involve the use, storage, and/or transport of hazardous materials that could potentially create a safety hazard to the public or environment. The potential hazards associated with the use, transport and/or storage of hazardous materials would be Class III, *less than significant*.

No hazardous waste is expected to be generated during construction of the solar array; however, construction equipment uses various hazardous materials (diesel fuel, oil, solvents, etc.). Oil, electronic equipment, and other potentially hazardous waste produced during operation would also be collected, stored and disposed of in accordance with applicable laws and regulations.

Hazardous or flammable materials used during construction would consist primarily of petroleum hydrocarbons and their derivatives (e.g., gasoline, diesel fuels, oils, lubricants, and hydraulic fluids) required for the operation of construction equipment. These materials are routinely associated with the operation and maintenance of heavy construction equipment or other support vehicles. In addition, it is anticipated that small quantities of additional, common hazardous materials would be used and produced on-site during construction, including antifreeze and used coolant, latex and oil-based paint, paint thinners and other solvents, cleaning products, and herbicides. Mineral oil may also be transported to the site during construction for use at the substations, switching station, and transformers.

Project operation and maintenance, including proposed the sub- and switching stations, would involve periodic and routine transport, use, and disposal of minor amounts of hazardous materials – primarily petroleum products (fuels and lubricating oils). Motor vehicle fuel could also be stored on-site and small gasoline generators could be used to: power equipment (e.g. welding machines), assemble trackers, and construct the tracker arrays.

Soils, surface water, groundwater, or the public could be affected if a spill of motor vehicle fuel or transformer fluid were to occur as a result of transportation of these materials to the site during construction. However, such materials are routinely, safely transported on public roadways. The transport of large quantities of hazardous materials is strictly regulated by the CHP, and the transport of oversize/overweight loads is regulated by Caltrans. Hazardous materials used during project construction would be transported along regulated routes by a licensed transporter, and would therefore not pose a substantial hazard to people or the environment.

Hazardous materials used in the construction staging areas or on-site access roads would be stored and disposed of in accordance with applicable regulations. Minor spills or releases of these hazardous materials could occur due to improper handling and/or storage practices during construction, operation, or transportation activities and result in health and safety hazards for employees on site. Motorized equipment used at the project site during construction, operation or maintenance could leak hazardous materials, such as motor oil, transmission fluid, or antifreeze, due to inadequate or improper maintenance, unnoticed or unrepaired damage, improper refueling, or operator error. This type of leak could occur on the project site as well as on vehicle/equipment routes between off-site origination points and the project site. Any activities requiring the use of motorized equipment may result in the accidental spill or release of potentially hazardous materials. Potential impacts related to minor spills would be largely avoided by training construction and operation personnel in the handling and storage of hazardous materials in compliance with OSHA standards. The project would be required to comply with OSHA and Cal/OSHA laws and guidelines to ensure personnel health and safety.

Multiple pad-mounted transformers would be connected by above-grade conduits to switching substations and pole-mounted meters associated with existing 12.47 kilovolt PG&E distribution lines. The electrical equipment would pose no electrical shock risk and would be safe for human and wildlife contact, and all electrical conduits would be rated for outdoor use.

The PV modules for proposed project would use copper indium gallium selenide (CIGS) solar cells. CIGS solar cells typically contain CIGs as the primary semiconductor material. Depending on the manufacture, cadmium sulfide may be used as the secondary semiconductor material. Elemental cadmium (Cd) is a lung carcinogen, and long-term exposure can cause detrimental effects on kidney and bone (Fthenakis and Zweibel, 2003). The U.S. EPA has classified cadmium as a probable human carcinogen (EPA, 2000). However, the proposed project would use CIGS solar cells that are compliant with the European Union's Restriction of Hazardous Substances (RoHS) directive.

Compliance with existing laws and regulations governing the transport, use and storage of hazardous materials and wastes as well as use of appropriately trained employees for PV module installation would reduce impacts related to exposure of the public or environment to hazardous materials to less than significant.

Mitigation Measures. No mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Threshold:	*Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.*
Threshold:	*Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.*

Impact HAZ-3 Repowering or decommissioning of the proposed project could result in the improper disposal of hazardous waste, including used PV solar modules. Impacts related to the disposal of decommissioned PV solar modules would be considered Class II – *significant but mitigable.*

The solar array(s) may be either repowered or decommissioned at the end of the project's useful life (anticipated to be 30 years or more). If repowered, the installed PV solar modules would likely be replaced with new, updated modules or other technology. Improper disposal or recycling of PV modules and other project components could result in long-term outdoor storage of metal, lead soldered, mineral oil-containing, or petroleum-lubricated parts (such as tracking motors and articulating support structures), which if exposed to rainfall over an extended period could result in contaminated runoff that can pose a hazard to people and the environment.

In addition, improper disposal of CIGS modules could result in a significant hazard to members of the public if the modules are not properly dismantled during recycling. As mentioned above in Impact HAZ-2, the proposed project would use CIGS solar cells that do not contain

cadmium, which is a carcinogen. However, recent studies have found that CIGS cells can leach several other hazardous metals after disposal such as molybdenum, zinc, aluminum, and selenium (Zimmermann et. al., 2013).

Though a plan for decommissioning has not been proposed at this time, it is assumed that some or all of the components (i.e., aluminum and steel components) would be salvaged and/or recycled, as feasible, and that components that cannot be salvaged would be removed and disposed of in accordance with the laws and regulations in effect at the time of repowering or decommissioning. However, if the PV modules are improperly disposed of, such as by abandoning them on-site, or in other locations in the U.S. or overseas, this could result in a potentially significant impact on human health and the environment.

Mitigation Measures. The following mitigation measure is required to reduce impacts related to the disposal of PV solar modules and support structures during decommissioning and/or repowering.

HAZ-3 **Disposal of PV Modules and Support Structures.** Prior to construction permit issuance, the system operator shall prepare a recycling or disposal plan for PV modules and support structures for MCE review and approval, in order that project structures not pose a risk to human health or the environment after project repowering and/or decommissioning. The plan shall specify how these project components shall be disposed of in a manner that will not pose a risk to human health or the environment, and the costs of such disposal.

Significance After Mitigation. Implementation of the above mitigation measure would reduce impacts related to disposal of PV modules and support structures during decommissioning and/or repowering to a less than significant level.

Threshold:	*Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan*

Impact HAZ-4 **The proposed project would not conflict with the Chevron Refinery's Emergency Response Program because Chevron is required to update its existing emergency and evacuation plans pursuant to Mitigation Measure Haz-2 of the Chevron Richmond Refinery Modernization Project EIR. Impact would be Class III – *less than significant.***

The proposed project would be located on the Chevron Refinery facility which currently has an Emergency Response Program that addresses all aspects of emergency response, including proper first-aid and medical treatment for exposures, evacuation plans and accounting for personnel after an evacuation, notification of local emergency response agencies and the public in the event of a release, and post-incident cleanup and decontamination requirements. The proposed project is not currently included as part of the program. However, as part of the

Chevron Refinery Modernization Project EIR certified by the City on July 29, 2014, the City imposed mitigation measure Haz-2, which provides:

> Prior to commencing construction of the solar project, Chevron shall update Facility emergency response and evacuation plans to account for the presence of the solar site on the Facility, and to assure that the modified emergency response and evacuation plans remain effective given the presence of the solar project.

With implementation of this existing mitigation measure, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan and thus would have a less than significant impact.

Mitigation Measures. As this impact would be less than significant, no mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

c. Cumulative Impacts. A description of the cumulative analysis methodology is included in Section 3.0, *Environmental Setting,* of this EIR. Cumulative development includes all development within Chevron Richmond Refinery facility and in the Richmond General Plan.

A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. While cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an accidental release. The chance of one uncontrolled release occurring is unlikely. The chance of two or more occurring simultaneously is remote. In addition, the extent of potential cumulative impacts is also a function of the proximity of the incidents in relationship to one another, as well as proximity to sensitive receptors. Due to the industrial nature of the project site and surrounding area, the distance to the closest sensitive receptors, and legal requirements related to the handling of hazardous materials, the potential for past, present, and reasonably foreseeable project to cause a cumulatively considerable impact is considered remote. Furthermore, the only large quantity hazardous materials that would be used or transported to or from the project site include motor vehicle fuels and transformer oil. Accidental spills of these substances would combine to create a cumulative impact during transport only if two transportation vehicles carrying hazardous or potentially harmful materials were to collide.

As described under Impact HAZ-2, compliance with existing laws and regulations governing the transport, use and storage of hazardous materials and wastes as well as use of appropriately trained employees for PV module installation would reduce impacts related to exposure of the public or environment to hazardous materials to a less than significant level. The proposed project therefore poses a minimal risk of accidental release that could result in offsite impacts.

Therefore, the project's contribution to cumulative hazardous materials release impacts, when combined with impacts from past, present, and reasonably foreseeable future projects, would be considered cumulatively less than considerable.

As described under Impact HAZ-4, with mitigation the proposed project would not interfere with the applicable emergency response plans. Chevron Refinery's emergency response plan covers the entire Chevron site and associated facilities. The proposed project would not contribute to a cumulative impact in this regard and impacts would not be cumulatively considerable.

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4.3 HYDROLOGY AND WATER QUALITY

4.3.1 Setting

a. Regional Hydrology. The project site is located in the San Francisco Bay Hydrologic Region, which covers approximately 2.88 million acres (4,500 square miles) and includes all of San Francisco and portions of Marin, Sonoma, Napa, Solano, San Mateo, Santa Clara, Contra Costa, and Alameda counties. Significant geographic features within this Hydrologic Region include the Santa Clara, Napa, Sonoma, Petaluma, Suisun-Fairfield, and Livermore valleys; the Marin and San Francisco peninsulas; San Francisco, Suisun, and San Pablo bays; and the Santa Cruz Mountains, Diablo Range, Bolinas Ridge, and Vaca Mountains of the Coast Range (Department of Water Resources [DWR], 2003).

The project site is within the East Bay Plain Sub-basin of the Santa Clara Valley Groundwater Basin (DWR, 2003). The East Bay Plain Sub-basin is bounded by San Pablo Bay to the north, contact with Franciscan bedrock to the east and Niles Cone Sub-basin to the south. The sub-basin extends beneath San Francisco Bay to the west and generally flows toward the west towards San Francisco or San Pablo Bays. The water-bearing formations of this region include alluvial fan deposits (Santa Clara Formation), mud, and alluvial deposits associated with an estuarine environment (Alameda Formation), alluvial silts, clays, and gravels (Temescal Formation), and artificial fill found mostly along the bay front (DWR, 2003). In general, these unconsolidated sediments can range up to 1,000 feet thick.

Watersheds. The project site is located in the Wildcat Creek Watershed, an 11 square mile watershed in Contra Costa County (Richmond General Plan, 2012). Wildcat Creek is listed on the 2010 Section 303(d) List of Impaired Water Bodies because of the presence of the pesticide, Diazinon (Richmond General Plan, 2012).

The watershed is within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which establishes requirements prescribing the quality of point and non-point sources of discharge and establishes water quality objectives through the Water Quality Control Plan for the local basin. A point source of discharge is defined as waste emanating from a single, identifiable point, such as a wastewater treatment plant. A non-point source of discharge results from drainage and percolation of activities such as agriculture and stormwater runoff.

Surface Water Quality. The quality of the waters in the bays and creeks associated with San Francisco Bay is from a mix of point and non-point source discharges, ground and surface water interactions, and water quality/quantity relationships. San Francisco Bay is an estuary with complex hydrodynamics and subject to a number of sediment and biochemical fate and transport processes. A number of water bodies associated with the Bay (?) are impaired due to excessive siltation (the pollution of water by fine material with a particle size dominated by silt or clay) and/or flow-alteration impairment.

Surface water bodies in the vicinity of the project site are used primarily for commercial and sport fishing, estuarine habitat, fish and wildlife habitat, recreation, rare species habitat, and

industrial service supply. The San Francisco Bay RWQCB has listed a number of these water bodies as impaired due to elevated levels of contaminants (San Francisco Bay RWQCB, 2013).

Among the impaired water bodies for the San Francisco Bay Region are central San Francisco Bay, San Pablo Bay, San Pablo Creek, and Wildcat Creek. The pollutants include chlordane, pesticides, dioxins, furans, mercury, polychlorinated biphenyls (PCBs), and selenium (State Water Resources Control Board [SWRCB], 2010). The sources of these pollutants or stressors include nonpoint sources from urban development, atmospheric deposition, ballast water, industrial and municipal point sources, agriculture, natural sources, and exotic species.

b. Project Site. The project site consists of a neighboring landfill and evaporation pond (operated until 1987) within the Richmond Refinery property. Specifically, it is located near the intersection of West Hensley Street and Castro Street/Richmond Parkway in Richmond, California. The approximately 20-acre evaporation pond site was filled, re-contoured, and re-vegetated in the mid- to late-1990s and is currently being maintained as a vacant lot. Though a berm was previously installed to ensure water-containment in the pond, it has served no purpose since pond closure in the late 1990s.

The adjacent, approximately 40-acre Landfill 15 site was closed and filled, re-contoured, capped, and re-vegetated in March of 1998 (Closure Certification Report Landfill 15, Waste Discharge Order, Chevron Richmond Refinery, D&M Job No. 38825-001-179). A 13-acre portion of Landfill 15 received waste from the nearby Pollard Landfill and was closed and capped with a vegetated cover in 1995. The remaining 27 acres of the landfill was closed and capped with approximately eight acres of (impervious) asphalt and approximately 19 acres of vegetative cover in 1996-1997. The final landfill cover is composed of a layer of 40-millimeter HDPE membrane covered by either two inches of (impervious) asphalt concrete in the paved areas or 12 inches of vegetated fill in the non-paved areas (ARCADIS, 2012). A methane gas collection and vent system as well as surface drainage control facilities were constructed with the cover in order to protect groundwater resources, control methane emissions, and control stormwater (Dames & Moore, 1998).

c. Regulatory Setting.

Federal.

Federal Clean Water Act. In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), with the goal of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters," 33 U.S.C. § 1251(a). The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The U.S. Environmental Protection Agency (USEPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the SWRCB and the RWQCBs.

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body's designated beneficial use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Water quality standards applicable to the project are contained in the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan) (CCRWQCB, 2015).

Section 303(d) of the CWA bridges the technology-based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the USEPA administrator deems they are appropriate), states are to develop "total maximum daily loads" (TMDL). TMDLs are established at the level necessary to implement the applicable water quality standards. A TMDL must account for all sources of the pollutants that caused the water to be listed. Wildcat Creek, which is located on the project site, is not an impaired water body and is not subject to any TMDLs.

Section 404 of the CWA prohibits the discharge of any pollutants into "waters of the United States," except as allowed by permit (33Code of Federal Regulations § 328.3(a)(3)). Section 404 of the CWA authorizes the U.S. Army Corps of Engineers to issue permits for and regulate the discharge of dredged or fill materials into wetlands or other waters of the United States. Under the CWA and its implementing regulations, "waters of the United States" are broadly defined to consist of rivers, creeks, streams, and lakes extending to their headwaters, including adjacent wetlands.

National Pollution Discharge Elimination System (NPDES). The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of best management practices (BMPs). The NPDES permit system was established in the CWA to regulate point source discharges (a municipal or industrial discharge at a specific location or pipe) and certain types of diffuse discharges, including urban stormwater and construction site runoff.

The project site is within the area of the Chevron Refinery NPDES General Permit (CA0005134). The SWRCB permits all regulated construction activities under NPDES General Permit for Storm Water Discharges Associated with Construction Activity (adopted July 13, 2011) (the "Construction General Permit"). Every construction project that disturbs one or more acres of land surface or that are part of a common plan of development or sale that disturbs more than one acre of land surface would require coverage under this Construction General Permit. To obtain coverage under this Construction General Permit, the landowner or other applicable entity must file Permit Registration Documents (PRDs) prior to the commencement of construction activity, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other documents required by the Construction General Permit, and mail the appropriate permit fee to the SWRCB. Since the proposed project would disturb more than one acre, construction of the project would be subject to this Construction General Permit requirements.

Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least one acre of total land area. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges. BMPs are intended to reduce impacts to the Maximum Extent Practicable (MEP).

State.

Porter-Cologne Water Quality Act. The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface and groundwater) and directs the RWQCBs to develop regional Basin Plans.

The San Francisco Bay RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in its jurisdiction. Water quality objectives for receiving waters within Contra Costa County are specified in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) prepared by the RWQCB in compliance with the federal CWA and the State Porter Cologne Act. The principal elements of the Basin Plan are a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Together, narrative and numerical objectives define the level of water quality that shall be maintained in the region. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDRs).

The RWQCBs have primary responsibility for issuing WDRs. The RWQCBs may issue individual WDRs to cover individual discharges or general WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders (CAOs) or Cease and Desist Orders (CDOs), assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

Local.

City of Richmond General Plan. The City of Richmond General Plan contains numerous policies related to hydrology and water quality. Policy CN3.2 requires the City to work with public and private property owners to reduce stormwater runoff in urban areas to protect water quality in creeks, marshlands and water bodies and the bays.

4.3.3 Impact Analysis

a. Methodology and Significance Thresholds. As stated in Section 2.0, *Project Description*, at the end of the project's useful life (anticipated to be 30 years or more), the proposed solar facility and associated infrastructure may be decommissioned in accordance with then-current decommissioning practices. At this time it is not possible to quantitatively evaluate potential hydrological impacts that would result from project decommissioning, due to the uncertainty of when decommissioning would occur and the technology or construction practices that would be available at that time. Therefore, based on current decommissioning practices, as a reasonable-worst case, this analysis assumes that hydrological impacts generated during future decommissioning would be similar to hydrological impacts generated during the construction and operational phase of the proposed project.

The following thresholds are based on Sections IX (*Hydrology and Water Quality*) in Appendix G of the *State CEQA Guidelines*. Impacts would be significant if the proposed project would result in any of the following:

1. *Violate any water quality standards or waste discharge requirements;*
2. *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;*
3. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;*
4. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*
5. *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;*
6. *Otherwise substantially degrade water quality;*
7. *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;*
8. *Place within a 100-year flood hazard area structures which would impede or redirect flood flows;*
9. *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or*
10. *Be subject to inundation by seiche, tsunami, or mudflow.*

The Initial Study (Appendix A) found that the proposed project would have a less than significant impact on groundwater resources, as capping and filling of Landfill 15 and fertilizer pond prevents water infiltration and the project would use only minimal water for washing of solar panels. The Initial Study also found no residential impacts within a 100-year flood zone, because the project does not include housing. Although the project site is located in FEMA Flood Zone VE – Coastal Flood Zone, the Initial Study found that the impacts on flood flows and exposure of people or structures to flooding would be less than significant, as the project is a passive use of the land and would be composed of solar panels that will not impede or redirect flood flows. In addition, the Initial Study found that proposed project would have a less than significant impact related to inundation by seiche, tsunami, or mudflow. These impacts are therefore not discussed in this section.

b. Project Impacts and Mitigation Measures.

Threshold:	*Violate any water quality standards or waste discharge requirements.*
Threshold:	*Otherwise substantially degrade water quality.*

Impact HYD-1 The proposed project could degrade water quality due to erosion and sedimentation associated with temporary ground-disturbing activities. Compliance with existing federal and state requirements would ensure that impacts remain Class III, *less than significant*.

Construction and operation of the project could result in potential impacts to water quality in connection with ground-disturbing activities during construction and operation (e.g., grading, maintenance, erosion control). Earth-moving activities, including grading and clearing of vegetation, could potentially result in soil erosion and sedimentation that could affect water quality. Although the project site is generally flat, grading could be required on the former fertilzer pond area to accommodate the installation of certain project improvements, but no grading would occur on the landfill area. Permanent disturbance to the site could therefore result from grading some areas of the former fertilizer pond area for module placement, leveling of the existing berm adjacent to the former fertilizer pond area (not the berm adjacent to the landfill supporting the purple needlegrass population), leveling for the placement of the ballasts in Phase I, and realignment of the access road. Temporary disturbance to the site would result from trenching for electrical conduits, staging areas, and other areas where construction activities would temporarily disturb the existing ground cover.

The project may be decommissioned at the end of its useful life (anticipated to be 30 years or more). Decommissioning would include removing the solar modules, transformers, electrical collection system, underground lines, and fencing. These activities could result in ground disturbances comparable to those anticipated during construction except for grading.

Surface water runs off the former landfill site into drainages that convey runoff offsite. Surface water runoff on the former evaporation pond site travels towards the tidal channel that runs between the landfill and evaporation pond sites. This runoff is typically in direct response to precipitation events, which are generally infrequent during the summer months, but can occur frequently and with great intensity during the rainy season to produce concentrated sheet flow, which could cause localized erosion of areas disturbed during construction or decommissioning related activities and/or stockpiled soils.

Regulations under the federal Clean Water Act require that a NPDES construction storm water permit be obtained for projects that would disturb greater than one acre during construction [refer to Section 4.3.2(d) (Regulatory Setting)]. The proposed project would disturb more than one acre during construction and is therefore required to comply with the NPDES program for storm water discharges associated with construction activities, including preparation of a Stormwater Pollution Prevention Plan (SWPPP) that outlines Best Management Practices (BMPs) that address post-construction runoff. BMPs that are typically specified within the SWPPP may include, but would not be limited to, the following:

- *The use of sandbags, straw bales, and temporary de-silting basins during project grading and construction during the rainy season to prevent discharge of sediment-laden runoff into storm water facilities;*
- *Revegetation as soon as practicable after completion of grading to reduce sediment transport during storms;*
- *Installation of straw bales, wattles, or silt fencing around the perimeter of graded building pads if they are not built upon before the onset of the rainy season (October 15th through April 15th); and/or*
- *Structural BMPs (e.g., grease traps, debris screens, oil/water separators, etc.) incorporated into facility design to minimize potential for contaminated stormwater to leave these areas.*

Decommissioning would also be required to comply with water quality standards in place at the time of decommissioning, which are anticipated to be similar or more stringent than the requirements currently placed on construction activities.

Compliance with the SWPPP requirements listed above would avoid or minimize potential impacts to water quality related to erosion and sedimentation. Impacts would be less than significant.

Mitigation Measures. The project would be required to comply with the NPDES program for storm water discharges associated with construction activities, including through preparation of a SWPPP and implementation of associated BMPs. No additional mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Threshold:	*Violate any water quality standards or waste discharge requirements*

Impact HYD-2 Construction or operation of the project could result in the accidental release of hazardous materials that could degrade water quality. Impacts would be considered Class II – *significant but mitigable.*

The proposed project could result in an accidental release of a hazardous material(s) during construction and/or operation, which could potentially degrade water quality within the Wildcat Creek Watershed. Potentially hazardous materials used in project construction or operation may include diesel fuel, gasoline, lubricant oils, hydraulic fluid, antifreeze, transmission fluid, lubricant grease, cement slurry, and other fluids required for vehicles and equipment. This equipment could also leak hazardous materials such as motor oil, transmission fluid, or antifreeze due to inadequate or improper maintenance, unnoticed or unrepaired damage, improper refuelling, or operator error. This type of leak could occur on the project site as well as on the vehicle/equipment routes, as described in Section 4.2, *Hazards and Hazardous Materials*.

Project construction and operation could directly or indirectly affect water quality. A direct impact would occur if a potentially hazardous material is released directly above or within the bed and banks of a flowing stream or waterbody, such as the tidal canal. Spills or leaks that occur on permeable surfaces could also potentially affect the Wildcat Creek Watershed. An

accidental release of a potentially harmful or hazardous material into a dry stream bed or wash would not directly impact water quality. Similarly, an accidental spill or release of hazardous materials outside of a stream channel would not directly impact water quality. However, accidental spills or releases of hazardous materials could indirectly impact water quality through runoff during a subsequent storm event, when the spilled material could come in contact with or be washed into flowing water. Similarly, groundwater could be contaminated through direct or indirect contact with potentially harmful or hazardous materials.

The Department of Toxic Substances Control (DTSC) regulates the generation, handling, storage, disposal, and transportation of hazardous waste, oversees the remediation of contaminated sites, and seeks to reduce the hazardous waste produced in California. PV modules used for the proposed project would be made of copper indium gallium selenide (CIGS) thin filament. If accidentally released, these materials could result in direct or indirect water quality degradation, though as noted in Section 4.2, *Hazards and Hazardous Materials,* the possibility of such a release occurring is remote. Modules would be inspected regularly and replaced as necessary. Industrial wastes generated during routine operations could include dielectric fluids, cleaning agents, and solvents, which would typically be put in containers, characterized, and labelled, possibly stored briefly, and transported by a licensed hauler to an appropriate permitted off-site disposal facility as a standard practice. Damaged components, including PV modules, would be replaced as required.

The project could adversely affect water quality due to the improper handling and use of hazardous materials, and operation of construction and maintenance equipment. Compliance with existing regulatory requirements, including DTSC regulations related to the generation, treatment, disposal, and transportation of hazardous materials, NPDES construction-phase requirements, as well as other local regulatory requirements would partially reduce impacts. However, additional mitigation has been identified below to minimize potential impacts due to accidental release or spill of a hazardous material during project construction and operation to a less than significant level.

Mitigation Measures. The following mitigation measure is required to reduce potential water quality impacts related to the release of hazardous materials, including during operation.

HYD-2 **Maintain Vehicles and Equipment.** All vehicles and equipment, including hydraulic hoses, shall be maintained in good working order to minimize leaks that could contact the ground. A vehicle and equipment maintenance log shall be updated and provided by the project proponent to Marin Clean Energy on a monthly basis for the duration of project construction.

Significance After Mitigation. With implementation of the above mitigation measure, impacts would be reduced to a less than significant level.

Threshold:	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;*

Threshold:	*Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff*

Impact HYD-3 The proposed project would alter the existing drainage pattern of the project area and would introduce impervious surfaces to the former fertilizer pond area, which is currently porous and allows infiltration. However, the project would not increase runoff, and therefore would not result in flooding or increased erosion downstream. Impacts would be considered Class III – *less than significant*.

The project would alter the existing drainage pattern of the site through the introduction of impervious surfaces on the former fertilizer pond area and project infrastructure. Temporary and permanently impervious areas introduced by the proposed project include footings for the PV modules on the former evaporation pond site and the ballast footings for the PV modules on the former landfill site. The ground under the PV modules on the former landfill site is currently impervious due to the landfill cap. The PV modules would not change the drainage patterns currently on that portion of the site.
The introduction of impervious surfaces and other project features could increase the rate and/or amount of surface runoff. The rate and amount of surface runoff is determined by multiple factors, including:

- The amount and intensity of precipitation;
- The amount of other imported water that enters a watershed; and
- The amount of precipitation and imported water that infiltrates to the groundwater.

Infiltration is determined by several factors, including soil type, antecedent soil moisture, rainfall intensity, the amount of impervious surfaces within a watershed, and topography. The rate of surface runoff is largely determined by topography and the intensity of rainfall over a given period of time. The proposed project would not alter any precipitation amounts or intensities, nor would it require any additional water to be imported into the proposed project area. However, construction would include earth-disturbing activities that may affect site-specific infiltration and permeability on the evaporation pond site during construction and decommissioning (temporary) and during operation (permanent).
The PV modules would themselves be considered a discontinuous impervious surface. However, the area underneath the modules on the former evaporation pond site would continue to be pervious. The degree to which there is a potential increase in runoff is related to the treatment of the ground surface, not to the existence of distributed solar panels above the ground.

A recent study completed at the University of Maryland (Cook and McCuen, October 2011) investigated the impact of solar projects on peak flows and runoff volume. The results of the study indicate that solar modules mounted on metal piles and raised above the ground (as with the proposed project) produce less than a 1% increase in peak flows and volumes, regardless of module angle, ground slope, storm magnitude, soil type, and storm duration. Further, results of the study indicate that changes in ground cover from pre- to post-project scenarios can cause increases in flows: 4% to 7% increase in volume and 42% to 100% increase in peak flow rates. These changes can result from clearing existing vegetation prior to construction and not

maintaining vegetation underneath the modules or between rows. Where not addressed through project design measures or mitigation, the removal of vegetation reduces initial rainfall capture and increases overland flow velocities, decreasing infiltration into the soil. The conclusion of the study is that the modules themselves do not substantially impact runoff volumes or peak flow rates, but unmitigated changes in ground cover and other substantial changes to the site, such as the creation of large-scale impervious surfaces, can have a substantial impact. In addition, as another point of reference, the State of New Jersey passed a law in 2010 classifying solar modules as pervious area, as runoff will continue to flow underneath adjacent overhanging modules.

Changes in ground cover can increase or decrease the rate and volume of peak flows. The proposed project is not anticipated to substantially affect runoff since the proposed project includes minimal changes in existing natural landforms, ongoing vegetation maintenance efforts during construction and operation, and limited areas of compaction. These measures would establish a consistent hydrologic response that is similar to existing conditions onsite. A small amount of flow concentration would be expected to occur where the runoff falls from each panel (the "drip line"), but this runoff is expected to disperse beneath the adjacent down slope modules. Therefore, the proposed solar modules are not expected to increase runoff on the project site.

Although modules are not anticipated to increase the rate of runoff, it is anticipated that the "drip line" effect of the modules, where surface runoff in direct response to precipitation events would be concentrated along the lowest edge of PV module installations, could cause localized increases in erosion. The topography where the modules would be located is generally flat. Areas temporarily disturbed during construction-related activities would be revegetated (either naturally or re-planted) consistent with a project-specific revegetation plan to avoid changes to peak flows and runoff volume. Impacts would be less than significant.

Mitigation Measures. The proposed project would be required to comply with the NPDES program, including through preparation of a SWPPP and implementation of associated BMPs, as outlined in Impact HYD-1. Compliance with existing regulations would reduce impacts related to increased erosion downstream to a less than significant level. No mitigation would be required.

Significance After Mitigation. Impacts would be less than significant.

c. Cumulative Impacts. A description of the cumulative analysis methodology is included in Section 3.0, *Environmental Setting*, of this EIR. Cumulative development includes all development within Chevron Richmond Refinery facility and in the Richmond General Plan.

With regards to the alteration of existing drainage patterns and creation of new impervious areas (Impact HYD-3) potentially resulting in substantial flooding on or offsite, the project would not increase runoff, and therefore would not result in flooding or increased erosion downstream. Therefore, the proposed project would not combine with similar impacts of other projects in the cumulative scenario. No cumulative impacts would occur regarding the alteration of existing drainage patterns or introduction of new impervious areas.

Cumulative impacts to water quality due to erosion and sedimentation and/or from the accidental release(s) of contaminants (Impacts HYD-1 and HYD-2) are highly site-specific and, due to the distance of cumulative projects from the proposed project site, a cumulative impact would not occur. In addition, it is reasonably anticipated that all projects in the cumulative scenario would be required to comply with laws and regulations relevant to water resources, and that such compliance would include development of SPCCs, SRPs, SWPPPs and BMPs to prevent water quality degradation from occurring. No significant cumulative impact related to water quality degradation from erosion/sedimentation or accidental release of hazardous materials would occur.

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5.0 OTHER CEQA REQUIRED SECTIONS

5.1 GROWTH-INDUCING EFFECTS

The *State CEQA Guidelines* require that an EIR include a discussion of the ways in which a project could cultivate economic or population growth, either directly or indirectly. Growth does not necessarily create significant physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant adverse environmental effects. Therefore, the proposed project's growth-inducing potential would be considered significant if it could result in significant physical effects in one or more environmental issue areas. A project may be growth-inducing (either directly or indirectly) if it fosters economic or population growth, removes obstacles to growth (e.g., roadway widening projects), or taxes community service facilities to the extent that the construction of new facilities would be necessary.

5.1.1 Economic and Population Growth

As a solar PV project, the proposed project would not substantially increase the residential or employment populations of Richmond or the region. Construction of the project may result in the need for temporary construction workers. However, it is anticipated that the majority of workers would be drawn from the local workforce in Richmond or the Bay Area. Consequently, no direct growth inducement is expected to result from project implementation.

For the reasons described above, the proposed project would not directly induce economic growth, but has the potential to indirectly induce a limited amount of economic growth in Richmond related to construction work. However, the proposed project would not be growth-inducing as it would not substantially affect long-term employment opportunities or increase the region's population.

5.1.2 Removal of Obstacles to Growth

The proposed project would result in the construction of new facilities for solar energy in the region. However, the facility would be located on a private site, closed to the public except for by special arrangement and guided by qualified personnel. No new roadways or oversized utilities infrastructure would be developed as part of the project and thus the project itself would not remove an obstacle to growth. Because the proposed project would not require the expansion or development of new infrastructure to serve the project, it would not remove an obstacle to growth.

5.2 SIGNIFICANT AND IRREVERSIBLE ENVIRONMENTAL EFFECTS

The *State CEQA Guidelines* specify that an EIR shall include a discussion of significant irreversible environmental changes which would occur if the proposed project were implemented. This includes analysis of the use of nonrenewable resources, primary and secondary impacts which commit the project area to similar uses in the future, and irreversible

environmental damage. This EIR does not identify any significant and unavoidable project impacts.

Construction and maintenance of the proposed project would consume building materials and energy, some of which are non-renewable resources. However, by providing a facility that produces more renewable energy for the use in the region, project implementation may help reduce long-term dependence on non-renewable petroleum resources. Consequently, the proposed project may have beneficial impacts related to the long-term use of non-renewable resources.

CEQA also requires decision makers to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve a project. The analysis contained in this EIR did not identify any significant and unavoidable impacts (in other words, all impacts can be reduced to a less than significant level with mitigation implemented).

6.0 ALTERNATIVES

As required by Section 15126(d) of the *State CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed project that could feasibly achieve similar objectives. Included in this analysis are the CEQA-required "no project" alternative and two additional alternatives.

Based on the potentially significant impacts that could result from implementation of the project as identified in Section 4.0, *Environmental Impact Analysis*, and the objectives identified for the project (see Section 2.0, *Project Description*), three alternatives were chosen for analysis. The three alternatives evaluated are:

- *Alternative 1: No Project*
- *Alternative 2: Fixed-Only Solar PV Project - No Trackers*
- *Alternative 3: Alternate Points of Interconnection (POC)*

As required by CEQA, this section also includes a discussion of the "environmentally superior alternative" among those studied.

6.1 ALTERNATIVE 1: NO PROJECT

6.1.1 Description

Under the No Project Alternative, construction and operation of the project would not occur. The baseline environmental conditions for the No Project Alternative are the same as for the proposed project. The current uses of the proposed project site would be retained. Other uses of the land (e.g., for Chevron operations) also could occur, consistent with existing zoning regulations for the site. However, for the purpose of this analysis, it is assumed that no development would occur.

6.1.2 Impact Analysis

If this alternative were implemented, no project-related development would occur on the project site. The baseline environmental conditions would continue to occur into the future, undisturbed, in the absence of project-related construction activities, unless other development occurred on the site. However, the objectives of the proposed project would remain unfulfilled under the No Project Alternative. This means that the contribution of the proposed project to meeting California's renewable energy goals would not occur. The proposed project's beneficial impacts related to greenhouse gas emissions would therefore not occur under this alternative. However, no other environmental impacts would occur.

It is foreseeable that a solar facility similar in size may be proposed elsewhere in California to help meet the 33 percent renewable energy portfolio mandate. Whether a different project would have more or less impact than the proposed project is unknown and beyond the scope of this evaluation.

Overall, impacts on the project site would be less under the No Project Alternative than for the proposed project, with the exception of impacts related to greenhouse gas emissions, which are discussed in the project Initial Study (Appendix A to this EIR).

6.2 ALTERNATIVE 2: FIXED-ONLY SOLAR PV PROJECT - NO TRACKERS

6.2.1 Description

Similar to the proposed project, this alternative would involve construction and operation of an approximately 10.5 MW PV system at the approximately 60-acre project site, which, in combination with approximately 11 utility scale inverters, would convert sunlight into electricity. However, under this alternative there would be only one type of solar panel onsite, the fixed ballast type. There would be no tracker type solar panels as part of the solar array. Thus this alternative would have the same amount of overall acreage on both the landfill and fertilizer pond sites but only fixed ballasts solar panels would be used, which would reduce the impacts related to ground disturbance on the site associated with the project as proposed.

6.2.2 Impact Analysis

Biological Resources. This alternative is located at the same site and would be the same overall size (approximately 60 acres) as the proposed project. However, under this alternative only fixed ballast type solar panels would be installed on the entire site (both the landfill site and the fertilizer pond site) and would utilize a non-ground penetrating, ballasted, fixed PV array. Under this alternative there would be no installation into the ground for the panel bases as the solar panels would all be similar to the type shown in Figure 2-7 (see Section 2.0, *Project Description*) and would rest on top of the ground on a raised foundation rather than being embedded into the ground like the tracker solar panels shown in Figure 2-8. Nevertheless, like the proposed project, construction of this alternative may have an impact on purple needlegrass, nesting birds, and indirect impacts to wetland and non-wetland waters. Impacts related to water quality and associated effects on biological resources would be slightly reduced with the reduced erosion potential of this alternative, which would require less ground disturbance. Implementation of similar mitigation measures as outlined in Section 4.4, *Biological Resources,* including BIO-1 through BIO-3, would be required in order to reduce biological resource impacts. Mitigation would reduce impacts to a less than significant level, similar to the proposed project. Overall, biological resources impacts would be similar too, although slightly less than, those of the proposed project, and mitigation measures BIO-1 through BIO-3 would continue to apply.

Hazards and Hazardous Materials. Similar to the proposed project, under this alternative all inverters and transformers would be mounted on concrete pads and the pads on the capped landfill would be placed above ground so as to not penetrate or otherwise jeopardize the landfill cap. However, under this alternative, the pads on the former fertilizer ponds would also be placed above ground rather than penetrating into the ground so as to further minimize the area of disturbance on that portion of the project site as well. Therefore, the likelihood that construction workers or operational staff could be exposed to residual

chemicals in on-site soils is reduced under this alternative compared to the proposed project. As with the proposed project, impacts would be less than significant with no mitigation required.

Similar to the proposed project, under this alternative, compliance with existing laws and regulations governing the transport, use and storage of hazardous materials and wastes as well as use of appropriately trained employees for PV module installation would reduce impacts related to exposure of the public or environment to hazardous materials to less than significant. In addition, with implementation of Mitigation Measure HAZ-3 which would require the preparation of a recycling or disposal plan for PV modules and support structures in order to reduce risk to human health or the environment after project repowering and/or decommissioning, impacts related to the disposal of decommissioned PV solar modules under this alternative would be less than significant.

Hydrology and Water Quality. Like the proposed project, this alternative could degrade water quality due to increased erosion and sedimentation associated with temporary ground-disturbing activities. However, there would be less ground disturbance under this alternative since there would be no ground penetrating PV arrays (all would be above ground). Thus impacts would be slightly less than compared to the proposed project. Compliance with existing federal and local requirements discussed in Section 4.3, *Hydrology and Water Quality*, would ensure that impacts are less than significant. Construction or operation of the project could result in accidental releases of contaminants that could degrade water quality; however, like the proposed project, potential impacts could be reduced to a less than significant level with implementation of Mitigation Measure HYD-2.

As with the proposed project, construction of this alternative may alter the existing drainage pattern and introduce impervious surfaces. This alternative would slightly increase impervious area as the entire fertilizer pond site would utilize the fixed ballast type module (as shown in Figure 2-9) rather than the tracker modules that would leave the area underneath the panel pervious. However, the potential for increased runoff and downstream sedimentation impacts is limited as the PV modules would themselves be considered a discontinuous impervious surface and the area between each of the modules on the former evaporation pond site would continue to be pervious. Precipitation would run off the solar panel or run off the top surface of the ballast holding and flow to the soil areas around and between each of the modules which would be pervious and contain vegetation. Thus the additional impervious surfaces onsite would divert rainfall but not affect the ability of the soil to absorb water. Impacts related to runoff and downstream erosion would therefore be slightly greater than the proposed project but would be less than significant. Thus, the potential for downstream flooding would not change from existing conditions and would be the same as the proposed project.

6.3 ALTERNATIVE 3: ALTERNATE POINTS OF INTERCONNECTION (POC)

6.3.1 Description

This alternative would only affect Phase 2 of the project and would include alternate points of interconnection that would require different pole line distribution than the proposed project. Under this alternative, the same overall amount of acreage would be used for solar PV arrays in

the same configuration as the proposed project, utilizing approximately 80,000 thin-film, non-reflective solar panels on the landfill and fertilizer pond sites with the same breakdown of fixed and tracking arrays. However, under this alternative the points of interconnection (POC) adjacent to the site would be different than the proposed project, which would be fed directly into the Pacific Gas & Electric (PG&E) utility grid by coupling into existing power lines running along Castro Street and connecting south at PG&E distribution circuit 1120 (shown on Figures 2-6 and 2-7) from a point along Castro Street approximately 800 feet south of the project site. Under the Alternative POC Alternative, the POC would still be adjacent to the project site, but would require upgrades according to one of two options:

a. Alternate POC #1 - PG&E would extend circuit 1120 approximately 800 feet to the north along the existing PG&E overhead lines and then connect directly from the site to the original connection point.
b. Alternate POC #2 – The project would use the existing Chevron pole-line exiting the southeast leased boundary to continue east across Castro Street to adjacent Chevron-owned property and then continue south along existing PG&E right of way (ROW) to an existing PG&E pole location that is directly east of the original circuit 1120 Point Of Interconnection.

6.3.2 Impact Analysis

Biological Resources. This alternative would be located at the same site and would be the same overall size (approximately 60 acres) as the proposed project. However, under this alternative the points of interconnection (POC) would be slightly different than the proposed project and would utilize one of two alternate POC along Castro Street. Overall ground disturbance would be the same as the proposed project, and thus impacts on purple needlegrass, burrowing owls, and indirect impacts to wetland and non-wetland waters would be generally similar. However, the relocation of POC and altering of utility lines may have a slightly greater impact to any nesting birds that utilize existing utility poles. Nevertheless, implementation of similar mitigation measures as outlined in Section 4.4, *Biological Resources,* including BIO-1 through BIO-3, would be required in order to reduce biological resource impacts, including those to nesting birds on any existing utility lines that may be impacted under this alternative. Mitigation would reduce impacts to a less than significant level, similar to the proposed project.

Hazards and Hazardous Materials. Similar to the proposed project, under this alternative, all inverters and transformers would be mounted on concrete pads and the pads on the capped landfill would be placed above ground so as to not penetrate or otherwise jeopardize the landfill cap. Therefore, the likelihood that construction workers or operational staff could be exposed to residual chemicals in on-site soils would be the same under this alternative than under the proposed project. Impacts would be less than significant.

Similar to the proposed project, under this alternative, compliance with existing laws and regulations governing the transport, use and storage of hazardous materials and wastes as well as use of appropriately trained employees for PV module installation would reduce impacts related to exposure of the public or environment to hazardous materials to less than significant. Impacts may be slightly greater than the proposed project, but would be less than significant.

In addition, with implementation of Mitigation Measure HAZ-3,which would require the preparation of a recycling or disposal plan for PV modules and support structures in order to reduce risk to human health or the environment after project repowering and/or decommissioning, impacts related to the disposal of decommissioned PV solar modules under this alternative would be less than significant.

Hydrology and Water Quality. Like the proposed project, this alternative could degrade water quality due to increased erosion and sedimentation associated with temporary ground-disturbing activities. However, because no additional grading would be required under this alternative, impacts would be the same as the proposed project. Compliance with existing federal and local requirements discussed in Section 4.3, *Hydrology and Water Quality*, would ensure that impacts are less than significant. Similar to the proposed project, construction or operation of the project could result in accidental releases of contaminants that could degrade water quality; however, like the proposed project, potential impacts could be reduced to less than significant with implementation of Mitigation Measure HYD-2.

Similar to the proposed project, construction on this alternative may alter the existing drainage pattern and introduce impervious surfaces. However, the overall change to impervious surfaces would be fairly similar to the proposed project except that some additional surface areas offsite may be necessary for any relocated utility lines needed for alternate POCs. Nevertheless, like the proposed project, precipitation is expected to run off the PV panels or any utility connection infrastructure and be absorbed into the soil surrounding the panels or utility connection footings. Impervious surfaces would divert rainfall but not affect the ability of the soil to absorb water. Thus, the potential for increased runoff, potentially resulting in flooding or increased erosion downstream downstream flooding would not change from existing conditions and would be the same as the proposed project, and impacts would remain less than significant.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

This section evaluates the impact conclusions for the proposed project and the three alternatives under consideration. It then identifies the environmentally superior alternative. In accordance with the *State CEQA Guidelines*, if the No Project alternative is identified as the environmentally superior alternative, the alternative among the remaining scenarios that is environmentally superior must also be identified. It should be noted that the proposed project would not result in any significant impacts; therefore, adopting the environmentally superior alternative rather than the proposed project would not avoid any significant environmental effects.

Table 6-1 shows whether each alternative's environmental impact is greater, lesser, or similar to the proposed project for each issue area.

Table 6-1
Impact Comparison Summary

Issue	Proposed Project	No Project (Alternative 1)	Fixed Only Solar PV Project (Alternative 2)	Alternate POCs Project (Alternative 3)
Biological Resources	=	-	=/-	=/+
Hazards and Hazardous Materials	=	-	=/-	=/+
Hydrology and Water Quality	=	-	=	=
OVERALL	**=**	**-**	**=/-**	**=/+**

\+ Greater impact than the proposed project
\- Less impact than the proposed project
= No better or worse than the proposed project

Based on the comparison provided in Table 6-1, the No Project and Fixed Only Solar PV Project alternative are considered environmentally superior, since each would result in equal or less impact than the proposed project. Because the No Project Alternative would eliminate (rather than reduce) anticipated environmental effects of the proposed project, it would be considered the most environmentally superior alternative. However, this alternative would not accomplish any of the objectives of the proposed project, including reduction of GHG emissions.

The Fixed Only Solar PV Project Alternative would result in impacts equal to or slightly less than the proposed project. Overall, the Alternate POCs Project Alternative (Alternative 3) would result in impacts equal to or slightly greater environmental impacts than the proposed project as this project would involve more offsite construction related to utility lines/poles. As noted above, the proposed project would not result in any significant impacts; therefore, adopting the environmentally superior alternative rather than the proposed project would not avoid any significant environmental effects.

7.0 REFERENCES AND PREPARERS

7.1 REFERENCES

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7.2 LIST OF PREPARERS

This EIR was prepared by Rincon Consultants, Inc. Persons involved in data gathering analysis, project management, and quality control include:

Richard Daulton, MURP, Principal in Charge
Jennifer Haddow, PhD, Principal
Abe Leider, AICP, Project Manager
Matt Maddox, MESM, AICP Assistant Project Manager
Sara Kopp, Associate Environmental Planner
Karly Kaufman, MESM, Senior Environmental Planner
Sarah Sorensen, Associate Environmental Planner

Appendix A

Notice of Preparation (NOP)
NOP Comment Letters
Initial Study

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT MARIN CLEAN ENERGY RICHMOND SOLAR PV PROJECT

DATE: April 8, 2015

TO: State Clearinghouse, Responsible and Trustee Agencies, and Interested Parties

LEAD AGENCY: Marin Clean Energy

Marin Clean Energy (MCE) is a Joint Powers Authority governed by a seventeen-member Board of Directors representing each of the participating jurisdictions, which include the City of Belvedere, Town of Corte Madera, Town of Fairfax, City of Larkspur, City of Mill Valley, City of Novato, City of Richmond, Town of Ross, Town of San Anselmo, City of San Pablo, City of San Pablo, City of Benicia, City of El Cerrito, City of San Rafael, City of Sausalito, Town of Tiburon, unincorporated Napa County and the County of Marin.

MCE intends to prepare an Environmental Impact Report (EIR) for a proposed 10.5 megawatt (MW) utility-scale solar photovoltaic (PV) project. In accordance with Section 15082 of the State CEQA Guidelines, MCE has prepared this Notice of Preparation to provide responsible and trustee agencies and other interested parties with information describing the proposal and its potential environmental effects. All environmental topics on the CEQA *Guidelines*' Appendix G Checklist will be studied in the EIR and/or Initial Study. MCE has suggested that at least the following environmental factors could be affected by the project:

- Biological Resources
- Hazards and Hazardous Materials
- Hydrology/Water Quality

PROJECT SPONSOR: Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901

PROJECT LOCATION: The proposed project is due west of the intersection of Castro and West Hensley Streets on three separate assessor parcels (561-100-038-0, 561-100-034-9, and 561-100-037-2) in the City of Richmond, in Contra Costa County, California. MCE has an option to lease this 60-acre site from the Chevron Products Company for solar energy development. Approximately 40 of these acres are a capped landfill, while the remaining 20 acres consist of filled and compacted fertilizer ponds.

PROJECT DESCRIPTION: A proposed 10.5 MW PV system at the project site would deploy approximately 80,000 thin-film, non-reflective solar panels, which, in combination with 11 utility scale inverters, would convert sunlight into electricity. This would be fed directly into the Pacific Gas & Electric (PG&E) utility grid from a point adjacent to the site.

The project would be built in two phases. Phase I would involve installation of a non-penetrating, ballasted, fixed-tilt PV array on the southern approximately 13 acres of the landfill. The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows.

Phase 2 would involve installation of a PV array on the northern 27 acres of the landfill area and 20 acre filled and compacted fertilizer pond. The Phase array 2 on the northern portion of the landfill would use a similar non-penetrating, ballasted, fixed tilt system as Phase 1, while the array on the compacted fertilizer pond site would use single axis tracking, ground mounted arrays. These panels would extend from at least 30 inches above grade to a maximum of height of 14 feet in its highest position. They would be aligned in a north/south orientation, spaced approximately 11 feet apart (east to west), and sloped at zero degrees.

All inverters and transformers would be mounted on concrete pads. The pads on the capped landfill would be placed above ground so as to not penetrate the landfill cap. Multiple pad mounted transformers would be connected by above-grade conduits to switching substations and pole mounted metering connected to existing 12.47 kilovolt PG&E distribution lines. The electrical equipment would pose no electrical shock risk and would be safe for human and wildlife contact, and all electrical conduits would be rated for outdoor use. The proposed site plan is attached to this notice.

Site access during construction and operation would be along existing paved roadways, with parking in the City of Richmond and/or the adjacent Chevron Products Company site. All deliveries and materials would enter by the existing Hensley Street gate onto paved access roads to the project site.

Construction of Phase 1 would begin in the second quarter of 2015 and would be completed during the second quarter of 2016. Construction of Phase 2 would begin in the third quarter of 2015 and be completed during the fourth quarter of 2016. The construction workforce is expected to peak at 100 personnel, and would consist of pre-qualified laborers, electricians, craftsmen, supervisory, support and management staff. Construction would generally occur between 7:00 AM and 5:00 PM on weekdays, though additional work hours and days may be necessary to make up for unexpected delays or testing.

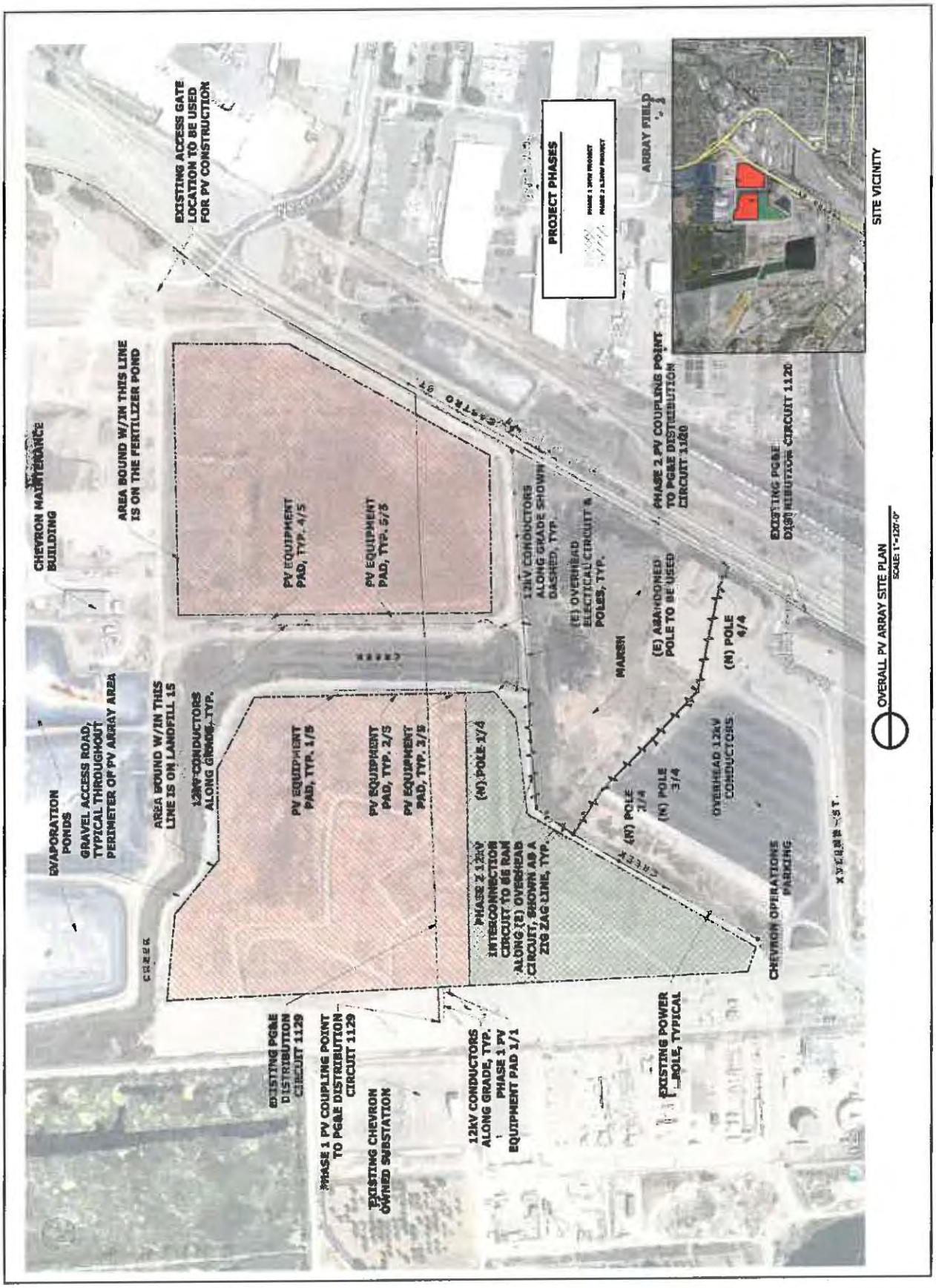
Construction and installation would require minimal vegetation removal and all disturbed areas would be re-vegetated with native grasses and wildflowers. The entire project would use less than 500 cubic yards of fill on the landfill and the only earthmoving on the compacted fertilizer pond would involve removal of a temporary berm and redistribution of the approximately 2800 yards of soil among various low spots on this portion of the project site. Chevron will use any excess soil generated from the project at other locations within the refinery property. All construction sites would be stabilized to minimize wind and storm water erosion and watering and other approved measures would be used to control dust onsite.

REVIEW PERIOD: State CEQA Guidelines require this Notice of Preparation to be circulated for a 30-day public review. Marin Clean Energy welcomes agency and public input during this period regarding the scope and content of environmental information to be included in the Draft EIR. **Responses to this Notice of Preparation may be submitted, in writing, by 5:00 p.m. on May 11, 2015** to:

Greg Brehm, Director of Power Resources
Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901
email: gbrehm@mcecleanenergy.org

Greg Brehm, Director of Power Resources
Marin Clean Energy

April 8 - 2015
Date


EXISTING ACCESS GATE LOCATION TO BE USED FOR PV CONSTRUCTION
PROJECT PHASES
ARRAY FIELD
SITE VICINITY
CHEVRON MAINTENANCE BUILDING
AREA BOUND W/IN THIS LINE IS ON THE FERTILIZER POND
PV EQUIPMENT PAD, TYP. 4/5
PV EQUIPMENT PAD, TYP. 5/5
12kV CONDUCTORS ALONG GRADE SHOWN DASHED, TYP.
(E) OVERHEAD ELECTRICAL CIRCUIT & POLES, TYP.
PHASE 2 PV COUPLING POINT TO PG&E DISTRIBUTION CIRCUIT 1120
EXISTING PG&E DISTRIBUTION CIRCUIT 1120
EVAPORATION PONDS
GRAVEL ACCESS ROAD, TYPICAL THROUGHOUT PERIMETER OF PV ARRAY AREA
AREA BOUND W/IN THIS LINE IS ON LANDFILL 15
12kV CONDUCTORS ALONG GRADE, TYP.
PV EQUIPMENT PAD, TYP. 1/5
PV EQUIPMENT PAD, TYP. 2/5
PV EQUIPMENT PAD, TYP. 3/5
(N) POLE 1/4
PHASE 2 12kV INTERCONNECTION CIRCUIT TO BE RAN ALONG (E) OVERHEAD CIRCUIT, SHOWN AS A ZIG ZAG LINE, TYP.
MARSH
(E) ABANDONED POLE TO BE USED
(N) POLE 4/4
(N) POLE 3/4
(N) POLE 2/4
OVERHEAD 12kV CONDUCTORS
CHEVRON OPERATIONS PARKING
EXISTING PG&E DISTRIBUTION CIRCUIT 1129
PHASE 1 PV COUPLING POINT TO PG&E DISTRIBUTION CIRCUIT 1129
EXISTING CHEVRON OWNED SUBSTATION
12kV CONDUCTORS ALONG GRADE, TYP. PHASE 1 PV EQUIPMENT PAD 1/1
EXISTING POWER POLE, TYPICAL
OVERALL PV ARRAY SITE PLAN
SCALE: 1"=120'-0"

Richmond Solar PV Project

Initial Study

Prepared by:

Marin Clean Energy
1125 Tamalpais Avenue
San Rafael, California 94901

Prepared with the assistance of:

Rincon Consultants, Inc.
180 Grand Avenue, Suite 400
Oakland, California 94612

July 2015

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Tables

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INITIAL STUDY

1. Project Title:	Richmond Solar Project
2. Lead Agency/Project Sponsor Name and Address:	Marin Clean Energy 1125 Tamalpais Avenue San Rafael, California 94901
3. Contact Person and Phone Number:	Greg Brehm Director of Power Resources Marin Clean Energy (415) 464-6037, gbrehm@mcecleanenergy.org
4. Project Location:	The project site is located due west of the intersection of Castro and West Hensley Streets on three separate assessor parcels (561-100-038-0, 561-100-034-9, and 561-100-037-2) in the City of Richmond, in Contra Costa County, California. Marin Clean Energy (MCE) has an option to lease this 60-acre site from the Chevron Products Company for solar energy development. Approximately 40 of these acres are a capped landfill, while the remaining 20 acres consist of filled and compacted fertilizer ponds.
5. General Plan Designation:	Business and Industry
6. Zoning:	M-2 (Light Industrial)

7. Description of Project:

The proposed project would involve site preparation, installation and operation of a 10.5 megawatt (MW) solar photovoltaic (PV) system at the project site. The installation would include approximately 80,000 thin-film, non-reflective solar panels, which, in combination with 11 utility-scale inverters, would convert sunlight into electricity. This would be fed directly into the Pacific Gas & Electric (PG&E) utility grid from a point adjacent to the site.

The project would be built in two phases. Phase I would involve installation of a non-penetrating, ballasted, fixed-tilt PV array on the landfill area (approximately 40 acres). The panels would extend from about 30 inches above grade to a maximum height of eight feet and would be south-facing at a 20-degree tilt in a series of east-to-west rows.

Phase 2 would involve installation of a PV array on the 20 acre filled and compacted fertilizer pond. The array on the compacted fertilizer pond site would use single axis tracking, ground mounted arrays. These panels would extend from at least 30 inches above grade to a maximum

of height of 14 feet in its highest position. They would be aligned in a north/south orientation, spaced approximately 11 feet apart (east to west), and sloped at zero degrees.
All inverters and transformers would be mounted on concrete pads. The pads on the capped landfill would be placed above ground so as to not penetrate the landfill cap. Multiple pad-mounted transformers would be connected by above-grade conduits to switching substations and pole mounted metering connected to existing 12.47 kilovolt (KV) PG&E distribution lines. The electrical equipment would pose no electrical shock risk and would be safe for human and wildlife contact, and all electrical conduits would be rated for outdoor use.

Site access during construction and operation would be along existing paved roadways. All deliveries and materials would enter by the existing Hensley Street gate onto paved access roads to the project site. Construction staging and parking would occur adjacent to the northwest of the landfill.

Construction of Phase 1 would take approximately 12 months to complete. Construction of Phase 2 would begin approximately three months following the start of construction for Phase I and would take approximately 15 months to complete. Thus total construction from start to finish would take approximately 18 months. The construction workforce is expected to peak at 100 personnel, and would consist of pre-qualified laborers, electricians, craftsmen, supervisory, support, and management staff. Construction would generally occur between 7:00 AM and 5:00 PM on weekdays, though additional work hours and days may be necessary to make up for unexpected delays or testing.

Construction and installation would require minimal vegetation removal and all disturbed areas would be re-vegetated with native grasses and wildflowers. Site preparation would require up to 500 cubic yards of fill on the landfill and removal and redistribution of a temporary berm on the fertilizer pond area of approximately 3,400 cubic yards of soil among various low spots on this portion of the project site. Grading would be balanced onsite; no export or import of cut or fill material is proposed. Construction sites would be stabilized to minimize wind and storm water erosion and watering and other approved measures would be used to control dust onsite.

8. Surrounding Land Uses and Setting:

The proposed solar array is planned for construction and operation at two adjacent parcels within the Chevron Richmond Refinery property near the intersection of West Hensley Street and Castro Street/Richmond Parkway in the City of Richmond, California. The sites were operated as a landfill and evaporation pond until 1987. In the mid-to late- 1990s, the approximately 20 acre evaporation pond site was filled, re-contoured, re-vegetated, and is currently being maintained as a vacant lot; the approximately 40 acre landfill site was filled, re-contoured, caped, and re-vegetated and has been maintained as a closed landfill since March 1998. (Closure Certification Report Landfill15, Waste Discharge Order, Chevron Richmond Refinery, D&M Job No. 38825-001-179 was reviewed and is available upon request). The evaporation pond site contains a berm that was put in place to ensure that water was contained on the site. Since the closure of the pond site, this berm is no longer necessary.

In 1995, the 13-acre area that received waste from the Pollard Landfill was closed and capped with a vegetated cover. In 1996-1997, the remaining 28 acres of the landfill was closed and capped with asphalt (8.5 acres) or vegetated (19.5 acres) cover. The final cover over the landfill area is composed of a layer of 40-milimeter HDPE membrane covered by either two inches of asphalt concrete in the paved areas or 12 inches of vegetated fill in the non-paved areas (ARCADIS, 2012). A methane gas collection and vent system as well as surface drainage control facilities were constructed with the cover in order to protect groundwater resources, control methane emissions, and control stormwater (Dames & Moore, 1998).

Major arterials providing immediate access to the project site include Interstate 580 and Richmond Parkway. The site is located in an industrial area of Richmond which includes uses such as oil refining operations, energy producing facilities, railroad operations, and storage and manufacturing facilities. There are no residential or retail uses in close proximity to the project site. The nearest such uses are residences located approximately 0.25 miles northeast of the site on Vernon Avenue. Peres Elementary School is located approximately 0.45 miles east of the site (across Richmond Parkway).

The project site is located within the M-2 (Light Industrial) Zoning District in the City of Richmond, within Contra Costa County. Contra Costa County is located in the East Bay area of the San Francisco Bay Area region of California. The City of Richmond is located on the western side of the County, with the City of Berkeley to the southeast and surrounding the City of San Pablo. The San Francisco Bay is directly to the north, south, and west of the city. The project area is approximately 60 acres in size, and is located due west of the intersection of Castro and West Hensley Streets. The site is in an industrial area and is directly surrounded by land that is also designated as Business and Industry and zoned Research and Manufacturing (M-1).

9. Other Public Agencies Whose Approval is Required:

The proposed project must be approved by the Marin Clean Energy Board of Directors and the City of Richmond's Design Review Board.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant" or "Potentially Significant Unless Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forest Resources	☐ Air Quality
■ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	■ Hazards & Hazardous Materials	■ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	■ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potential significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
I. AESTHETICS				
-- Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	■	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	■	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	■	☐

a) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located in an industrial zone on a property that was previously used as a landfill and fertilizer evaporation pond. The project site is not located near any scenic routes and there are no public views of scenic resources available from or through the site. Thus the project would not block such views from public viewing places. Therefore, the proposed project would have a less than significant impact on scenic vistas.

b) ***LESS THAN SIGNIFICANT IMPACT.*** The project site is located in an industrial zone on a property that was previously used as a landfill and fertilizer evaporation pond. The site location is a vacant, generally flat property with no scenic resources such as trees, rock outcroppings or historic buildings. Therefore, the proposed project would have a less than significant impact on scenic resources.

c) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located in an industrial zone on a property that was previously used as a landfill and fertilizer evaporation pond. The property is otherwise vacant and is surrounded by other industrial uses. The site is an open, vacant area with ruderal vegetation and grasses throughout the approximately 60 acres. Dirt roads and paved roads exist on the perimeter and a few berms exist on both the landfill site and the area surrounding the former fertilizer pond area. A concrete lined ditch/channel also flows through the landfill site. While onsite character is generally open grasslands, the area surrounding the site is characterized by industrial use. The installed solar array panels would have a maximum height of 14 feet, with most being a maximum height of 8 feet. Additionally, the project site is not visible from the nearest residential area due to a distance of 0.25 miles and existing obstructions. While the visual character on the project site would change with installation of

solar panels, the impact would not be significant because the character would be consistent with the industrial use and designation of this area in the City and also because the site lacks visibility from any public viewpoints. Therefore, the project would have less than significant impact on visual character and quality.

d) ***LESS THAN SIGNIFICANT IMPACT***. There are currently no sources of night lighting or glare on the project site. The proposed project would not include any exterior lights other than low, downward-focused security lighting where necessary. However, glare would be produced from the reflection of sunlight off of the glass surfaces of the proposed solar panels. A solar panel comprises numerous solar cells. A solar cell differs from a typical reflective surface in that it has a microscopically irregular surface designed to trap the rays of sunlight for the purposes of energy production. The intent of solar technology is to increase efficiency by absorbing as much light as possible (which further reduces reflection and glare). Solar glass sheets (the glass layer that covers the PV panels) are typically tempered glass that is treated with an anti-reflective or diffusion coating that further diffuses the intensity of glare produced. Solar panels without an anti-reflective coating have approximately the same reflectivity as water; with an anti-reflective coating, the reflectivity is significantly less than that of water.

The solar panels installed over the fertilizer evaporation pond would use trackers to allow the panels to follow the sun in its path from east to west across the southern sky as the day progresses. These devices orient the solar panels perpendicular to the incident solar radiation, thereby maximizing solar cell efficiency and potential energy output. Some of these tracking devices use GPS, which enables the tracking to be extremely accurate, and are capable of positioning the array so that the incident rays would be at or very near a surface normal (perpendicular angle). During midday conditions, when the sun is high in the sky, the law of reflection indicates that the reflected ray would be at an equally low angle and reflected in a direction toward the light source or back into the atmosphere away from receptors on the ground. When the sun is low on the horizon (near dawn or dusk), the sun's angle in the sky is low; however, reflected rays would still be directed away from ground-level receptors. The panels would not be expected to cause extreme visual discomfort or impairment of vision for residents because the panels are designed to absorb as much sunlight as possible and therefore would have minimal reflectivity. The type of glare that could be expected in the most extreme conditions, when the sun is low in the sky, is a level of veiling reflection that may cause viewers to be less able to distinguish levels of contrast, but not cause a temporary loss of vision. The solar panels installed above the landfill would be fixed tilt panels and would not follow the sun throughout the day.

Due to the relatively low reflectivity and because the site would not generally be visible from roadways, the panels would not be expected to cause visual impairment for motorists traveling on nearby roadways. Effects would likely be the greatest to motorists traveling east in the early evening, when the sun is at its lowest arc. However, the project site is not bounded by a public, east-west roadway and no motorists will be coming from the west. Similarly, residents of the area would not be affected by the glare, as the nearest residences are approximately 0.25 miles away and do not have an obstructed view of the project site. Therefore, the proposed project would result in less-than-significant impacts related to light and glare.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES				
-- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. -- Would the project:				
a) Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	■
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■

a, b, e) ***NO IMPACT***. The project site is within an urban area that is zoned for industrial use. No agricultural activities are present on or adjacent to the property. The California Department of Conservation's 2012 map of Contra Costa County Important Farmland shows that the project site is within an area of "urban and built-up land" and not within an area of "prime farmland" (Department of Conservation, 2012). The project site is not under Williamson Act contract. The project site is not located on agricultural land and the proposed project would not involve any development that could result in the conversion of farmland to non-agricultural uses. For these reasons, the project would have no impact with respect to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use; conflict with existing agricultural zoning or Williamson Act contract; or other conversion of farmland to non-agricultural use.

c, d) ***NO IMPACT***. The project site is not located on or near forest land or timberland, nor are there any trees within the project area. The project would have no impact on such resources.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
III. AIR QUALITY				
-- Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	■	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	■	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	■

a, b, c, d) ***LESS THAN SIGNIFICANT IMPACT***. The San Francisco Bay Area Air Basin (SFBAAB) is in nonattainment for the federal and state standards for ozone, as well as the state standard for particulate matter (PM_{10} and $PM_{2.5}$) and the federal standard for 24 hour $PM_{2.5}$ (Bay Area Air Quality Management District [BAAQMD] Website, June 2015). Thus, the region currently exceeds several state and federal ambient air quality standards and is required to implement strategies to reduce pollutant levels to recognized acceptable standards.

The *2010 Clean Air Plan* is the most recently approved regional Clean Air Plan (CAP). It was adopted in September 2010 by BAAQMD and updated the Bay Area ozone plan. This plan provides an integrated, multi-pollutant strategy to improve air quality, protect public health, and protect the climate. The plan is designed to provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases in a single, integrated plan. The *2010 Clean Air Plan* developed Transportation Control Measures (TCMs) by reviewing the *2005 Ozone Strategy* measures, and modifying and expanding them based on new investment and policy decisions and public input. In particular, the TCMs have been updated to reflect the policy and investment decisions made in the Metropolitans Transportation Commission's (MTC) regional transportation plan, *Transportation 2035: Change in Motion.* The 2010 Clean Air Plan is also based on population and employment forecasts from the Association of Bay Area Governments (ABAG). The proposed project would not increase the population in the region and would thus be consistent with the 2010 Clean Air Plan. Therefore, impacts related to the CAP are less than significant.

Emissions generated by the proposed solar generation facility would include temporary construction emissions and some minor long-term operational emissions associated with maintenance activities. Construction activities including site preparation which would require up to 500 cubic yards of fill on the landfill and removal and redistribution of a temporary berm on the fertilizer pond area of approximately 3,400 cubic yards of soil and the operation of construction vehicles and equipment over unpaved areas have the potential to generate fugitive dust (PM_{10}) through the exposure of soil to wind erosion and dust entrainment. In addition, exhaust emissions associated with heavy construction equipment would potentially degrade air quality. The BAAQMD has identified feasible PM_{10} control measures for construction activities. According to the BAAQMD CEQA Guidelines, if all of these control measures are implemented, a less than significant impact is expected for PM_{10} emissions. Construction associated with the project would temporarily increase air pollutant emissions, possibly creating localized areas of unhealthy air pollution levels or air quality nuisances. However, as shown in Table 1, construction emissions would not exceed any BAAQMD thresholds and all construction activities would be required to comply with BAAQMD control measures to reduce PM_{10} emissions, including watering exposed ground areas twice a day during construction, covering haul trucks, suspending grading activities when winds exceed 25 miles per hour, and limiting area subject to excavation, grading or other construction activities at any one time, as well as additional measures. Construction emissions would be less than significant.

Table 1
Maximum Daily Unmitigated Construction Air Pollutant Emissions

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Year 2016	1.75	13.03	17.52	2.72	1.33
Year 2017	0.81	5.3	8.82	1.01	0.39
Maximum lbs/day [a]	**1.75**	**13.03**	**17.52**	**2.72**	**1.33**
BAAQMD Thresholds	*54*	*54*	*N/A*	*82*	*54*
Threshold Exceeded?	**No**	**No**	**N/A**	**No**	**No**

Source:
BAAQMD, May 2010 CEQA Guidelines: ,
http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx and;
CalEEMod;see Appendix B for calculations
[a] Maximum daily emissions based on highest in any construction year, i.e. 2016 or 2017.

Long-term emissions associated with operational impacts would include emissions from vehicle trips for maintenance workers and landscape maintenance equipment associated with periodic (a few times per year) maintenance of the facility. At most, truck trips for maintenance would be approximately 2 trips per day on those days where maintenance activities would occur. This minimal amount of traffic and use of landscape equipment onsite would result in minimal air emissions as shown in Table 2. Emissions would not exceed BAAQMD significance thresholds and thus would not expose nearby sensitive receptors to pollution. Operational emissions would be less than significant.

Table 2
Maximum Daily Unmitigated Operational Air Pollutant Emissions

	Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum lbs/day [a]	**0.54**	**0.49**	**0.75**	**0.1**	**0.03**
BAAQMD Thresholds	*54*	*54*	*N/A*	*82*	*54*
Threshold Exceeded?	**No**	**No**	**N/A**	**No**	**No**

Source:
BAAQMD, May 2010 CEQA Guidelines: ,
http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx and;
CalEEMod;see Appendix B for calculations
[a] Maximum daily emissions based on all operational sources including mobile, area (landscaping), and energy.

e) ***NO IMPACT***. Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills.

The proposed project would install a solar generation facility on the site. This type of use would not generate objectionable odors that could affect a substantial number of people. Therefore, there are no impacts related to odors.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES				
-- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	■	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	■	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	■	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	■	☐	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	■	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

a) ***POTENTIALLY SIGNIFICANT IMPACT***. Implementation of the proposed solar project may result in impacts to special status plant and animal species. Impacts to special status species are potentially significant and will be analyzed further in the EIR.

b) ***POTENTIALLY SIGNIFICANT IMPACT***. Implementation of the proposed solar project may result in impacts to sensitive and riparian habitats. Impacts to sensitive and riparian habitats are potentially significant and will be analyzed further in the EIR.

c) ***POTENTIALLY SIGNIFICANT IMPACT***. Implementation of the proposed solar project may result in indirect impacts to wetland habitat. Impacts to wetland habitats are potentially significant and will be analyzed in the EIR.

d) ***POTENTIALLY SIGNIFICANT IMPACT***. Implementation of the proposed solar project may result in impacts to migratory wildlife. Impacts to migratory wildlife are potentially significant and will be analyzed in the EIR.

e) ***POTENTIALLY SIGNIFICANT IMPACT***. The City of Richmond identifies conservation and natural resource policies in the General Plan 2030 Conservation, Natural Resources, and Open Space Element. The project site is located in the vicinity of jurisdictional wetland and non-wetland waters, which are protected by local policy. Therefore, impacts are potentially significant and will be analyzed further in the EIR.

f) ***NO IMPACT***. There are no habitat conservation plans or natural community conservation plans in force within the project area. No impact would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
V. CULTURAL RESOURCES				
-- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	■	☐
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	■	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	■	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	■	☐

a-d) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located in an industrial area on a site that was previously a landfill and fertilizer evaporation pond. No known historical or archaeological resources are present at the site. In addition, grading would not extend below areas that have been historically disturbed (landfill and filled ponds), so would not encounter undisturbed paleontological or archaeological resources or human remains. Therefore, the project would have less than significant impacts to these resources.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VI. GEOLOGY AND SOILS				
-- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	■	☐
ii) Strong seismic ground shaking?	☐	☐	■	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
iv) Landslides?	☐	☐	☐	■
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	■	☐
c) Be located on a geologic unit or soil that is unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	■	☐
d) Be located on expansive soil, as defined in Table 1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☐	■	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■

a.i, ii) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located to the west of the Hayward Fault Zone. The project is not located within a fault zone. Additionally, once

constructed, the project would be low in height and unmanned; no habitable space or structures are proposed. If an earthquake fault were to rupture and strong seismic ground shaking were to occur, people or habitable structures would not be exposed to substantial adverse effects from the project. Therefore, the project would have a less than significant impact in this regard.

a.iii) ***LESS THAN SIGNIFICANT IMPACT***. Studies conducted for the General Plan 2030 EIR place the project site in an area of unknown liquefaction potential. However, because the site is a filled-in landfill and fertilizer evaporation pond, it is highly compacted and less susceptible to liquefaction. Additionally, no habitable space or structures are proposed. If liquefaction were to occur, people or habitable structures would not be exposed to substantial adverse effects from the project. Therefore, the project would have less than significant impact.

a.iv) ***NO IMPACT***. The project site is located on relatively flat land that is not within a fault zone. Therefore, the project would have no impact related to landslides.

b) ***LESS THAN SIGNIFICANT IMPACT***. Because the proposed project would be located on a site that was previously operated as a landfill and fertilizer evaporation pond, the facility would be constructed to minimize ground disturbance and site preparation and grading activities would be balanced cut and fill (no import or export of materials). All inverters and transformers will be on concrete pads, and pads on the landfill site will be placed above ground. PV arrays on the landfill site will be non-penetrating, ballasted, fixed tilt arrays and PV arrays on the fertilizer pond site will be ground mounted, single axis tracking arrays. Less than 500 cubic yards of fill will be used on the landfill and the only earthmoving on the fertilizer evaporation pond would include the removal of a temporary berm and the re-distribution of approximately 3,400 yards of soil among various low spots on this portion of the project site. Any excess soil would be used by Chevron at other areas on the refinery property. After construction, the area will be re-vegetated with native plants and wildflowers to prevent erosion.

Regulations under the federal Clean Water Act require that a National Pollution Discharge Elimination System (NPDES) construction storm water permit be obtained for projects that would disturb greater than one acre during construction. The proposed project would disturb more than one acre during construction. As a result, the proposed project would be required to comply with the NPDES program for storm water discharges associated with construction activities, including through preparation of a Stormwater Pollution Prevention Plan (SWPPP), which outlines Best Management Practices (BMPs) that would address construction and post-construction runoff and would limit erosion. BMPs that are typically specified within the SWPPP may include, but would not be limited to, the following:

- *The use of sandbags, straw bales, and temporary de-silting basins during project grading and construction during the rainy season to prevent discharge of sediment-laden runoff into storm water facilities;*
- *Revegetation as soon as practicable after completion of grading to reduce sediment transport during storms;*
- *Installation of straw bales, wattles, or silt fencing around the perimeter of graded building pads if they are not built upon before the onset of the rainy season (October 15th through April 15th); and/or*

- *Structural BMPs (e.g., grease traps, debris screens, oil/water separators, etc.) incorporated into facility design to minimize potential for contaminated stormwater to leave these areas.*

Compliance with the required SWPPP requirements listed above along with revegetation of the site after construction activities would avoid or minimize potential impacts to erosion. Impacts would be less than significant.

c) ***LESS THAN SIGNIFICANT IMPACT***. The City of Richmond General Plan 2030 EIR identifies the surficial geology of the site as Bay Mud. However, because the site was previously used as a landfill and fertilizer evaporation pond, fill and compaction has occurred and changed the soil profile. During construction, grading and disturbance to the soil profile would be minimized, primarily affecting near-surface depths, preventing lateral spreading. The site and surrounding area is flat and would not be impacted by landslides. Additionally, no habitable space or gathering space for people are proposed. Therefore, impacts from unstable soil would be less than significant.

d) ***LESS THAN SIGNIFICANT IMPACT***. The City of Richmond General Plan 2030 EIR identifies the surficial geology of the site as Bay Mud. However, because the site was previously used as a landfill and fertilizer evaporation pond, fill and compaction have occurred. The site is not expected to have highly expansive soil, and in any case no habitable space or gathering space for people are proposed. Therefore, impacts would be less than significant.

e) ***NO IMPACT***. The proposed project would be an unmanned solar facility and no septic tanks or alternative wastewater dis posal systems would be required. Therefore, no impact would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS				
-- Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	■	☐
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	■

a) ***LESS THAN SIGNIFICANT IMPACT***. Project construction and operation would generate greenhouse gas (GHG) emissions through the burning of fossil fuels or other emissions of GHGs related to the production of solar panels, use of equipment and vehicles during construction, and the use of maintenance vehicles and equipment during the operational phase of the project, thus potentially contributing to cumulative impacts related to global climate

change. As shown in Table 3 below, overall GHG emissions associated with construction and operation of the project would result in approximately 329 metric tons Carbon Dioxide equivalent emissions (CO_2e). However, once completed the project would provide a reduction of approximately 5,458 metric tons CO_2e through the generation of solar energy. Thus the overall net change of GHG emissions would be approximately 5,129 metric tons CO_2e and thus overall GHG emissions would decrease compared to existing conditions. Therefore, impacts to GHG emissions would be less than significant.

Table 3
Combined Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions
Construction	128 metric tons CO_2e
Operational Area (Landscaping) Energy Solid Waste Water	 0.1 metric tons CO_2e 0 metric tons CO_2e 0 metric tons CO_2e 0 metric tons CO_2e
Mobile	201 metric tons CO_2e
Total	**329 metric tons CO_2e**
Displaced Emissions (as a result of Solar Energy Use)	**- 5,458 metric tons CO_2e**
Net Change of GHG Emissions	**- 5,129 metric tons CO_2e**

Sources: See Appendix B for calculations and for GHG emission factor assumptions.

b) ***NO IMPACT***. Policy EC3.1 of the Richmond General Plan 2030 Energy and Climate Element states: "Promote the generation, transmission and use of a range of renewable energy sources such as solar, wind power, and waste energy to meet current and future demand and encourage new development and redevelopment projects to generate a portion of their energy needs through renewable sources." The proposed project is a solar energy project which would directly fulfill and advance this policy of developing renewable energy sources. Therefore, the project will have no impact.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
-- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	■	☐	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	■	☐	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	■	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	■	☐	☐	☐
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	■	☐

a) ***POTENTIALLY SIGNIFICANT IMPACT***. The use and transportation of hazardous materials would occur through the construction, maintenance, and operation of the solar array facility. Additionally, the repowering or decommissioning of the project would require disposal of hazardous waste. These impacts are potentially significant and will be explored further in the EIR.

b) ***POTENTIALLY SIGNIFICANT IMPACT***. The proposed project involves the use, transport and disposal of hazardous materials throughout construction, operation, maintenance, and future decommissioning. Additionally, the project is located on a closed landfill and a filled fertilizer evaporation pond, both of which contain hazardous materials. Therefore, impacts on the public and environment from a potential release of hazardous materials during grading and construction are potentially significant and will be analyzed further in the EIR.

c) ***NO IMPACT***. The proposed project is not located within ¼ mile of an existing or proposed school. Therefore, no impacts would occur in this regard.

d) ***POTENTIALLY SIGNIFICANT IMPACT***. The project site is located on a site previously operated as a landfill and fertilizer evaporation pond. The site is identified in the state's Geotracker database as a Cleanup Program Site with a status of "Open – Remediation. Grading and construction activities at this site have the potential to expose hazardous materials. Therefore, impacts from hazardous materials to the public or environment are potentially significant and will be analyzed further in the EIR.

e, f) ***NO IMPACT***. The project site is not within an airport land use plan, within two miles of a public airport, or within the vicinity of a private airport. Therefore, there would be no impact related to airport safety.

g) ***POTENTIALLY SIGNIFICANT IMPACT***. The proposed project would be located on the Chevron Refinery facility which currently has an emergency response plan and emergency evacuation plan. The proposed project is not currently included as part of those plans and thus development of the solar facility could potentially interfere with an existing emergency or evacuation plan. Therefore, the project would have a potentially significant impact on an emergency response and/or emergency evacuation plan and this issue will be further discussed in the EIR.

h) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located in an urban portion of the city of Richmond in western Contra Costa County. The project site does not fall within any Very High Fire Hazard Severity Zones (VHFHSZ) as designated by the California Department of Forestry and Fire Protection. Wildland fires are not a concern on the project site, as the site is not located near any wildlands. Therefore, the project would have a less than significant impact on wildland fires.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY				
-- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	■	☐	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering or the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	■	☐	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	■	☐	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	■	☐	☐	☐
f) Otherwise substantially degrade water quality?	■	☐	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	■
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	■	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY				
-- Would the project:				
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	■	☐
j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	■	☐

a, c, d, e, f) ***POTENTIALLY SIGNIFICANT IMPACT***. The proposed project would include grading and the installation of solar panels and related infrastructure on a site that is a vacant lot over a capped landfill and a filled former fertilized pond. The addition of solar panels on the site and the associated construction activities have the potential to have adverse effects on water quality that drains from the site into surrounding waters and infrastructure. Therefore, impacts to water quality, drainage, and runoff are potentially significant and will be analyzed further in the EIR.

b) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located on a site previously used as a landfill and fertilizer evaporation pond. The landfill site has been capped and filled in, and generally prevent water from infiltrating. The project would use minimal water, as the only water use would be for washing the solar panels approximately once each year and light irrigation for landscape plantings in limited areas. Temporary and permanent impervious areas that would be introduced by the proposed project include impervious footings for the PV modules on the former evaporation pond site and the ballast footings for the PV modules on the former landfill site. The PV modules would themselves be considered a discontinuous impervious surface. However, the area underneath the modules on the former evaporation pond site would continue to be pervious. As such, water would not be prevented from entering the water table to a greater extent than it is with the current use. Therefore, impacts to groundwater resources would be less than significant.

g) ***NO IMPACT***. The proposed project does not include any housing or residential component. Therefore, no impact related to housing within a 100-year flood hazard area would occur.

h) ***LESS THAN SIGNIFICANT IMPACT***. The project site is located in FEMA Flood Zone VE – Coastal Flood Zone with velocity hazard, with a base flood elevation of 9 feet. However, the project would not substantially alter the topography of the site, and would be composed of installations that would not substantially impede or redirect flood flows. Therefore, the impact on flood flows would be less than significant.

i) ***LESS THAN SIGNIFICANT IMPACT***. Although the project site is located in a flood hazard zone, no habitable structures or gathering places for people are proposed. There are no dams in

the City of Richmond or western Contra Costa County. Therefore, impacts from exposure of people or structures to flooding or from dam failure would be less than significant.

j) ***LESS THAN SIGNIFICANT IMPACT***. According to the City of Richmond General Plan EIR, there are no designated risk areas in the City of Richmond for tsunamis or seiches. The wave height for a 'worst case scenario' tsunami in the Aleutians Islands was modeled at about 7.5 feet along the Richmond Bay Coast and 7.9 feet within the Richmond Channel. Therefore, impacts from seiches and tsunamis would be less than significant.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
X. LAND USE AND PLANNING				
-- Would the project:				
a) Physically divide an established community?	☐	☐	☐	■
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■
c) Conflict with an applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	■

a) ***NO IMPACT***. The project site is located in an existing industrial area. It is surrounded on all sides by industrial uses and urban development. No features that would separate land uses or otherwise divide a community are proposed. Therefore, there would be no impact.

b) ***NO IMPACT*** The City's General Plan designates the site as Business and Industry and according to the City's zoning code the site is designated as M-2, light industrial. This land use and zoning allows for minor public utilities and major public utilities with a conditional use permit. The project would be consistent with the allowed uses. Therefore, no impact would occur.

c) ***NO IMPACT*** The project site is located on a site previously operated as a landfill and fertilizer evaporation pond. The site is not covered by a habitat conservation plan, natural community conservation plan, or other adopted conservation plan. Therefore, there would be no impact from conflicts with a conservation plan.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XI. MINERAL RESOURCES				
-- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	■

a, b) ***NO IMPACT***. The project site is located at a previous landfill and fertilizer evaporation pond. The site is not designated for mining uses nor actively mined. Therefore, the project would have no impact on mineral resources or mineral resource recovery.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XII. NOISE				
-- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) A substantial permanent increase in ambient noise levels above levels existing without the project?	☐	☐	■	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XII. NOISE				
-- Would the project result in:				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise?	☐	☐	☐	■

a, c) ***LESS THAN SIGNIFICANT IMPACT***. The proposed use of the site for solar energy generation is a passive use. Once operational, noise from the project would be limited to that produced by the inverters that convert the electricity from direct current (DC) to alternating current (AC). Typical noise associated with a large inverter system (comprising four inverters) would be approximately 70 dB at a distance of 10 feet (estimate provided by PV Powered, an inverter manufacturer). Since sound measurements are not proportional and are measured on a logarithmic scale, each additional 4 inverters would add 3 dB to the overall sound produced. The proposed project includes 11 inverters, which would produce approximately 76 dB of sound at a distance of 10 feet. Sound levels typically attenuate from a point source at approximately 6 dB for each doubling of distance. Based on this attenuation rate, the inverters would produce noise levels of approximately 33.6 dB at the nearest multi-family dwellings, which are located approximately, 0.25 miles (1,320 feet) from the proposed project location. This noise level would not exceed City thresholds, of 65 dB, for exterior noise levels, and would be well below ambient noise levels in typical quiet suburban neighborhoods. Therefore, impacts to long-term noise levels resulting from the proposed project would be less than significant.

b) ***LESS THAN SIGNIFICANT IMPACT***. The proposed use of the site for solar energy generation is a passive use. The installed solar cells would not create groundbourne vibrations or noise levels. Some groundbourne vibrations or noise levels may be generated during construction; however, the site is surrounded by industrial uses, with the nearest sensitive receptor being 0.25 miles away, and construction hours would generally occur between 7:00 AM and 5:00 PM on weekdays. Additionally, construction would not involve any excavation and all grading onsite would be balanced cut and fill. Grading equipment would generate vibration but due to the distance to the closest sensitive receptors (0.25 miles away), the vibration and groundbourne noise would not be perceptible. Therefore, impacts from groundbourne vibration and groundbourne noise levels would be less than significant.

d) ***LESS THAN SIGNIFICANT IMPACT***. Some construction noise may be generated during construction; however, the site is surrounded by industrial uses, with the nearest sensitive receptor being 0.25 miles away, and construction hours would generally occur between 7:00 AM and 5:00 PM on weekdays. Additionally, construction would not involve any excavation and all grading onsite would be balanced cut and fill. Construction equipment would generate noise temporarily but due to the distance to the closest sensitive receptors (0.25 miles away), the

ambient noise levels would not increase to a level of significant. Therefore, the impact from temporary increases in ambient noise levels will be less than significant.

e, f) ***NO IMPACT***. The proposed project is not located within an airport land use plan, within two miles of a public airstrip, or within the vicinity of a private airstrip. The nearest airport is the San Rafael Airport, which is located 9.25 miles away from the project location. Therefore, the project would have no impact in this regard.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIII. POPULATION AND HOUSING				
-- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	■
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

a-c) ***NO IMPACT***. The project site is located on an otherwise vacant site previously used as a landfill and fertilizer evaporation pond. The area is zoned industrial and is surrounded by industrial uses. No residences would be demolished or built. As a solar PV project, the proposed project would not increase the residential or employment populations of Richmond or the region. Construction of the project may result in the need for temporary construction workers. However, it is anticipated that workers would be drawn from the local workforce in Richmond or the Bay Area. Consequently, no direct population growth is expected to result from project implementation. Therefore, the project would have no impact on population growth and housing.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	■	☐
ii) Police protection?	☐	☐	■	☐
iii) Schools?	☐	☐	■	☐
iv) Parks?	☐	☐	■	☐
v) Other public facilities?	☐	☐	■	☐

ai-av) ***LESS THAN SIGNIFICANT IMPACT***. The proposed project is a passive use in an industrial area and is anticipated to have a relatively low demand for police and fire protection services. No substantial population growth would result from the project, so demand for school and park services would be minimal. No new fire, police, school, park, or other public facilities would be required. Therefore, impacts to public services will be less than significant.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XV. RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XV. RECREATION				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

a-b) ***NO IMPACT***. The project site is located on a site that was previously used as a landfill and fertilizer evaporation pond and is currently operated as a vacant lot in an industrial area. The proposed use as a solar generation facility would not increase the use of recreational facilities through an increase in population or removal of recreation facilities. The proposed project does not include the construction of recreational facilities. Therefore, the project would have no impact on recreational facilities

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
-- Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	■	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	■	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	■	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
-- Would the project:				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	☐	☐	■	☐
e) Result in inadequate emergency access?	☐	☐	■	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?	☐	☐	■	☐

a, b, f) ***LESS THAN SIGNIFICANT IMPACT.*** The proposed project would utilize the site for solar energy generation, which is a passive use. Once constructed, the facility would be unmanned and would not cause a substantial increase in traffic or mass transit use. Traffic to/from the site would be less than two trips per day for maintenance staff vehicles on average which would be periodic (less than a few times per month). The project does not conflict with any plan, ordinance, or policy for the circulation system, conflict with an applicable congestion management program, or conflict with adopted plans, policies, or programs regarding public transit, bikeways, or pedestrian facilities. Therefore, a less than significant impact would occur.

c) ***NO IMPACT***. No airport or airstrip is located within the project area. The proposed project would not affect air traffic patterns. The closest airport to the project location is the San Rafael Airport, which is 9.25 miles away. Therefore, no impact related to air traffic would occur.

d) ***LESS THAN SIGNIFICANT IMPACT***. The proposed project does not include the construction or substantial alteration of any roads. Access to the site is via existing access roads from Castro Street. As discussed under Item I, *Aesthetics*, due to the relatively low reflectivity and because the site would not generally be visible from roadways, the panels would not be expected to cause visual impairment and associated safety hazards for motorists traveling on nearby roadways. Therefore, a less than significant impact would occur.

e) ***LESS THAN SIGNIFICANT IMPACT***. The project site is fully surrounded by existing access roads. The project would not result in inadequate emergency access. Therefore, no significant impact would occur. Impacts related to emergency response and evacuation are discussed under Item VIII, *Hazards and Hazardous Materials*, above.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS				
-- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	■
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	■
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	■
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	■	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	■
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	■

a, b, e) ***NO IMPACT***. Development in the project vicinity is served by the Richmond Municipal Sewer District with Richmond Municipal Wastewater Treatment Plant providing wastewater collection and treatment services to the project area. However, the proposed solar project is a passive use that would not generate substantial quantities of wastewater or require wastewater treatment. Therefore, no impacts would occur.

c) ***NO IMPACT***. The project site is located on a capped landfill and filled former fertilizer evaporation pond. Both the landfill and fertilizer evaporation pond sites previously had storm water management systems developed onsite The landfill site has concrete-lined drainage ditches traversing the site and the fertilizer evaporation pond has a constructed swale on the north and west side of the site that carries storm water to a treatment pond north of the parcel.

Temporary and permanent impervious areas that would be introduced by the proposed project include impervious footings for the PV modules on the former evaporation pond site and the ballast footings for the PV modules on the former landfill site. The PV modules would themselves be considered a discontinuous impervious surface. However, the area underneath the modules on the former evaporation pond site would continue to be pervious. Thus the project would not substantially increase stormwater runoff. Installation of the solar facility would not alter the existing storm water management infrastructure and no new storm water management would need to be incorporated. Therefore, no impact would occur.

d) ***LESS THAN SIGNIFICANT IMPACT***. The proposed project is a passive use that requires a limited amount of water. The solar panels would be washed once per year and maintenance workers would utilize a portable water tank on maintenance vehicles or a water truck during those days that washing is to be completed. Thus the project would not utilize water from onsite or need to construct water utility lines onsite. No new or expanded water entitlements are needed. Therefore, there would be a less than significant impact on water supplies.

f, g) ***NO IMPACT***. The project site is served by Richmond Sanitary Service with solid waste being disposed of at the Keller Canyon Landfill in northern Contra Costa County. However, the proposed project is passive use that would not generate substantial amounts of solid waste once operational. Some construction waste may be generated, however, because no demolition of existing structures is necessary, the overall amount of construction debris would be minimal and would not exceed the capacity of the Keller Canyon Landfill. Therefore, no impacts on solid waste needs will occur.

	Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	□	□	□
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	□	□	□

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	■	☐	☐	☐

a) ***POTENTIALLY SIGNIFICANT IMPACT***. As noted under Section IV, *Biological Resources*, implementation of the proposed solar project would have potentially significant impacts on biological resources. Impacts are potentially significant and will be further addressed in an EIR.

b) ***POTENTIALLY SIGNIFICANT IMPACT***. Cumulative impacts with respect to biological resources, hydrology and water quality, and hazards and hazardous materials are potentially significant and will be analyzed further in an EIR.

c) ***POTENTIALLY SIGNIFICANT IMPACT***. Substantial adverse effects on human beings associated with hydrology and water quality and hazards and hazardous materials are potentially significant and will be analyzed further in an EIR.

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Appendix B

Environmental Design and Implementation Considerations

Rincon Consultants, Inc.
180 Grand Avenue, Suite 400
Oakland, California 94612
510 834 4455
FAX 834 4433

info@rinconconsultants.com
www.rinconconsultants.com

November 17, 2014
Project No. 14-00951

Greg Brehm
Director of Power Resources
Marin Clean Energy
781 Lincoln Avenue, Suite 320
San Rafael, CA 94901

Subject: Environmental Design and Implementation Considerations for Installing Solar Array at the Chevron Refinery in the City of Richmond, California

Dear Mr. Brehm:

Rincon Consultants, Inc. (Rincon) is pleased to submit this memorandum regarding environmental design and implementation considerations for the Chevron Refinery Solar Project located in the City of Richmond, California.

This memorandum is based on Rincon's current understanding of the project, which is the installation of solar arrays on Chevron's properties, Landfill 15 and the Former Fertilizer Plant and Ponds (FFPP). Maps from existing documents, which show the location and layout of the sites, are included in Attachments A to C. This memorandum summarizes potential environmental constraints at the sites due to the former operations and implemented engineering controls, which are maintained by Chevron and regulated by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The first section of this memorandum provides background information that describes the physical characteristics and historical land uses at the site. The remainder of the document is organized by the following implementation phases: Design; Pre-Construction; Construction; and Operation, Maintenance, and Monitoring.

Recommended next steps for the initial design stage of the project are summarized at the end of this document. In general, during the initial design stage, close collaboration will be needed with Chevron, the RWQCB, and other agencies to ensure parties are in concurrence with proposed modifications to the sites. The project applicant should seek to identify all permits that the facility is operating under and conduct a review of those permit conditions. Documents related to post-closure requirements at each site should be obtained from Chevron or the RWQCB to better understand existing engineering controls, their limitations to construction of a solar array, and how the post-closure documents may need to be modified, due to design and construction of the solar array to meet regulatory requirements.

This document is based on Rincon's review of the documents provided by Marin Clean Energy and independent research conducted by Rincon Consultants. A complete list of references is provided at the end of this memorandum.

BACKGROUND

This background information is provided to describe the history of the sites and engineering controls and environmental monitoring that have been implemented at the Landfill 15 and FFPP site.

Landfill 15

The 41-acre site was operated as an evaporation pond and landfill from the early 1960's to 1987. The site location and layout are shown in the figures included in Attachment A. The landfill received a variety of wastes including sludges (separator, paint, and water treatment), oily soils and dredge spoils, resins, catalyst fines, lime, and sulfur. In 1992, treated non-hazardous acidic sludge and dredged bay mud generated from the closure of the Pollard Pond (northwest of the refinery, adjacent to San Pablo Bay) was disposed over 13 acres of this landfill site (RWQCB, 2011a). The site is managed under RWQCB Order No. R2-2012-0015. Currently, Landfill 15 is capped and engineering controls have been designed and implemented to protect groundwater resources, control methane emissions, and control stormwater, as described below.

Disposal Area Cover (Dames & Moore, 1998; RWQCB, 2011a)
The old evaporation pond sludges, which operated from the early 1960's to 1987, are covered by clayey-gravel fills. In 1995, the 13-acre area that received treated, non-hazardous materials from the Pollard Landfill was closed by placement of a low-permeability cap consisting of (from bottom up) 24 inches of compacted fill, 6 inches of clay, geomembrane, geonet, non-woven geotextile layer, and 12 inches of vegetated fill (ARCADIS, 2012; Attachment B). The remaining 28 acres of Landfill 15 was covered during 1996 to 1997 with a cover consisting of (from bottom up) compacted fill, 40-mil HDPE, and 6 inches of aggregate base with 2 inches of asphaltic concrete (8.5 acres) or 12 inches of vegetated fill in non-paved areas (19.5 acres) (ARCADIS, 2012; Attachment B).

Groundwater Protection System (Dames & Moore, 1998; RWQCB, 2012)
Groundwater elevations typically occur within 2 to 10 feet below grade (outside of the landfill area). Three hydrogeologic zones have been identified, in the refinery area, within the top 150 feet of the subsurface: A-zone (2 to 10 feet below grade, consists of artificial fill and Bay Mud, discharges to Bay); C-zone (an 80- to 90-foot thick zone beneath A-zone consisting of interbedded alluvial and estuarine sediments; Bay Mud has been an effective hydraulic barrier between the A- and C-zones); and B-zone (relatively permeable unit 5 to 15 feet thick at approx. 100 feet below grade).

Collection trenches, backfilled with gravel, were installed along the western, northern, and northwestern boundaries of the main landfill as an interim remedial measure from 1988 to 1989 to prevent phase-separated hydrocarbons from seeping to the ground surface or migrating to Castro Creek. GPS components are shown in Attachment A, on Figure 8 from

RWQCB Order No. R2-2012-0015. Trenches drained to sumps and phase-separated hydrocarbons were routinely extracted.

In 1992, a groundwater protection system (GPS) consisting of extraction trenches, extraction wells, and barrier walls (soil-bentonite) were installed along the north, east, and southern edge to prevent offsite migration of potentially contaminated groundwater. Approximately 3,750 linear feet of barrier wall, ranging in depth from 9 to 20 feet below grade has been constructed at Landfill 15 (Attachment A, Figure 8).

Landfill Gas Collection and Vent System (Dames & Moore, 1998)
To vent potential methane or other vapors generated from the landfill waste located beneath the cap, a layer of non-woven geotextile was installed beneath the HDPE membrane. Twelve vents were installed in 8-inch square by 6-inch deep pockets of clean gravel beneath the geotextile; location of these elements were not shown in the documents researched, as-built drawings will need to be obtained.

Surface Drainage Control (Dames & Moore, 1998; RWQCB, 2011b)
Surface runoff either flows through a system of concrete-lined ditches or flow over the surface. Runoff from Landfill 15 discharges to Castro Creek or its tributary.

Self-Monitoring and Reporting Program (RWQCB, 2012)
As required by RWQCB Order No. R2-2012-0015, the area within the boundary of Landfill 15 and the receiving waters must be observed quarterly to monitor the condition of final covers and stormwater management system elements, evidence of ponded water, odors, erosion, day lighted waste, and floating/suspended materials of waste origin or discoloration/turbidity in receiving waters. Annually, the site must be inspected by a registered California engineer/geologist prior to onset of rainy season to identify damaged areas from erosion, rodents, or otherwise. Appropriate repairs shall be performed prior to the rainy season. Runoff/run-on control facilities for their effectiveness and overall conditions as needed according to weather conditions during the winter months (November to April).

Groundwater monitoring (semi-annual): water level measurements, analyze groundwater for field measurements and site-specific constituents of concern as listed in RWQCB Order No. R2-2012-0015. In addition, annual reporting and contingency reports are required if any seepage or prohibited discharge occurs. According to the RWQCB Order No. R2-2012-0015, an approved post-closure maintenance/monitoring plan was prepared for the site. This document needs to be obtained and reviewed.

Former Fertilizer Plant and Ponds

The FFPP were built in 1959 for nitrogen-based fertilizer manufacturing (ARCADIS, 2009). The plant was demolished in 1995 and the area was covered with clean fill and asphalt base. The ponds were filled with approximately 8 feet of clean fill during 2000 to 2003. As of 2009, the plant area was a relatively flat gravel surface covering approximately 15 acres and the pond area was a vegetative field covering approximately 20 acres. The FFPP area is shown in relation to the surrounding Pond Site area in Attachment C (Figure 1, Leidos,

2014). Metals in soil (arsenic, beryllium, cadmium, and cobalt) are the primary risk driver for this site (ARCADIS, 2009).

The groundwater zones are identical to the zones discussed above for the Landfill 15 area (uppermost A-zone, intermediate C-zone, and lower B-zone). The low-permeability Bay Mud, which underlies the site, and an engineered Hydraulic Containment System (HCS) provide containment of groundwater at the site. The HCS consists of a hydraulic control trench and a containment wall which surrounds the FFPP area (along the southern, eastern, and western boundaries) and adjacent Integrated Wastewater Pond System (IWPS) (Attachment C, Figure 1 by Leidos). The hydraulic control trench consists of a 2-foot wide trench filled with granular material and slotted drain pipes installed near the base of the trench which collected and convey groundwater to sumps with extraction pumps spaced at 500-foot intervals along the trench (ARCADIS, 2009). From 1980 to 1983, a barrier wall made of asphalt emulsion, sand, cement, and water (Aspemix) was constructed to the east and west of the FFPP area, which connected to a pre-existing clay barrier installed in 1973 and 1974. In 1991, a bentonite-soil slurry barrier was installed to the south and east of the FFPP area (RWQCB, 1997).

Based on Rincon's research an oversight agency was not identified for the FFPP area; the project applicant should verify this with Chevron during negotiations. The HCS that surrounds the site is related to the adjacent Pond Site which is regulated by RWQCB Order No. 97-049; impacts to the HCS should be avoided during the installation of a solar array on the FFPP.

ENVIRONMENTAL DESIGN CONSIDERATIONS

This section outlines environmental considerations for the design phase of the solar array for each site. Site specific items are discussed below:

Landfill 15

Landfill 15 is regulated by RWQCB Order No. R2-2012-0015, close collaboration with the RWQCB and Chevron's Landfill 15 Engineer-of-Record will be needed during the design and planning stages of the solar array. Alterations to the landfill and appurtenances must be in accordance with Order No. R2-2012-0015 and may not negatively impact the cap, GPS, landfill gas collection and vent system, and existing stormwater conveyance. The RWQCB may charge the client to recover reasonable expenses for overseeing design modifications to Landfill 15.

CRITICAL PATH ITEMS

- ☐ Chevron, RWQCB, and other agency collaboration
- ☐ Obtain documents:
  - Permits and permit conditions
  - As-built drawings
  - Closure documents for FFPP
  - Post-closure Maintenance/Monitoring Plan
- ☐ Revise documents (if required by regulatory body):
  - Post-closure Maintenance/Monitoring Plan
  - Financial Assurance for Post-Closure Maintenance/Monitoring

Grading

Based on recommendations listed in a 2012 presentation prepared by ARCADIS for installing a solar array on Landfill 15 (ARCADIS, 2012), a slope grade of less than or equal to 4% is preferred for installation of a solar array. It was recommended that approximately 5.5 acres of Landfill 15 be re-graded such that a total of 23.1 acres would be available for installation of a solar array; it was estimated that approximately 55,000 cubic yards of fill material and 1,350 tons of aggregate base-rock material would be imported and placed on top of the existing cap. The landfill has currently settled approximately 1.03 feet; there was an estimated lifetime settlement estimate of 3.2 feet, therefore settlement is likely to continue, especially if additional material is placed on the cap (ARCADIS, 2012). An updated settlement evaluation and geotechnical evaluation is recommended to account for weight of the solar array and additional fill material, if needed.

Stormwater Management

Stormwater flow rates should be re-evaluated based on the solar array design, grading, and existing stormwater features. The existing stormwater features may need to be redesigned to accommodate revised flow rates.

Underground Utilities

Rincon's current understanding is that the proposed solar array would not require the installation of underground utilities. However, if it is later deemed necessary to install underground utilities, they should be placed within the top fill layer, above the low-permeable geomembrane liner of the cover. The fill layer ranges in thickness between 6 inches (beneath the asphaltic concrete cap) and 12 inches (beneath the vegetated cover). If subsurface penetrations will occur through the low-permeable geomembrane, the layer must be replaced or repaired, in accordance with site design standards and regulatory requirements.

Regulatory Involvement

Post-closure modifications are likely regulated by the RWQCB; however, other agencies may be involved. The following documents, if applicable, may need to be updated, as required by the RWQCB: Financial Assurance and Post-Closure Maintenance/Monitoring Plan.

According to the ARCADIS 2012 presentation, a California Department of Toxic Substances Control (DTSC) permit exists for the site, which would require a post-closure amendment. However, Rincon could not find a post-closure permit for Landfill 15 on the DTSC's online EnviroStor system; a post-closure permit for only the neighboring Landfarms area (west of Landfill 15) was obtained. If a DTSC permit does exist for Landfill 15, the DTSC may become involved with the project and the permit may need to be modified to demonstrate that the liner will not be impacted.

The project applicant should request Chevron to disclose all permits and permit conditions related to the site.

Former Fertilizer Plant and Ponds

No site-specific solar array details have been provided for this site. Impacts to the HCS must be avoided so as not to interfere with groundwater containment operations. Otherwise, it appears no cover, liner, or cap exists at this site. If no waste layers exist at the site and minimal settlement would be expected to occur. No limitations to installing underground utilities or pilings for a solar array were identified.

PRE-CONSTRUCTION

Following finalization of solar array design and prior to initiating construction, the following items should be addressed:

CRITICAL PATH ITEMS

- ☐ Schedule coordination with Chevron, RWQCB, and additional agencies
- ☐ Prepare Health and Safety Plan
- ☐ If performing earthwork, prepare Soil Management Plan
- ☐ Prepare Stormwater Pollution Prevention Plan

- Coordinate with the RWQCB and any addition agencies that may become involved regarding proposed schedule. Agencies may send a representative to the site to observe construction.
- As required by the Occupational Safety and Health Administration (OSHA) standard addressing hazardous waste site operations (Code of Federal Regulations, Title 29, Section 1910.120), prior to beginning construction, prepare a site-specific Health and Safety Plan to outline the procedures that onsite personnel will follow to minimize the potential for health and safety hazards and exposure to constituents of concern during the course of work to be performed at the subject properties.
- If earthwork activities are anticipated (grading or excavation), the RWQCB may require a Soil Management Plan be prepared to address how to handle material impacted by historical operations. The Soil Management Plan should detail procedures to properly excavate, transport, and dispose of potentially impacted materials that may be encountered during solar array construction.
- Prepare a Stormwater Pollution Prevention Plan (SWPPP) following the Construction General Permit (CGP) 2009-0009-DWQ as amended by 2012-0006 DWQ CGP. The objective of the SWPPP is to prescribe Best Management Practices (BMP) to reduce pollutants in stormwater discharges and prevent them from leaving the construction site.

CONSTRUCTION

During construction, the following measures should be anticipated:

Grading

If grading activities are performed, the final grade should be completed in a way to prevent ponding of stormwater.

Dust Mitigation
To avoid dust generation, control excavation areas with soil wetting and physical barriers (plastic sheeting), as needed. Wetted surfaces should be visually wet and care shall be taken during wetting procedures to avoid generation of runoff.

Stormwater Management
Implement stormwater management methods and strategies to reduce the sediment and pollutants being transported offsite during excavation activities and temporary storage of hazardous materials (to be detailed in the SWPPP as described above). If applicable, best Management Practices (BMPs) will be applied to stockpiles to reduce the potential of sediment being transported offsite by wind gusts and storm events. In addition, hazardous waste management activities shall be performed as outlined in the California Stormwater Quality Association BMP Handbook.

Landfill 15

During placement of imported soil/aggregate, if required, and installation of solar array components, small, lighter construction equipment should be used to minimize damage to the existing landfill cover.

Former Fertilizer Plant and Ponds

If stained or impacted soil is discovered during earthwork activities, Chevron and the RWQCB should be notified and the material should be characterized and sampled for offsite disposal. If material is shipped offsite, use waste manifest documentation to track the movement of waste soils from the point of generation to the disposal facility, as required by Section 66260.10 of the California Code of Regulations, Title 22, Division 4.5, Chapter 10, Article 2.

OPERATION, MONITORING, AND MAINTENANCE

Landfill 15

While monitoring and maintaining solar array components at Landfill 15, the operator should look for evidence of ponding water, odors, erosion, day lighted waste, liquid leaving or entering the area. All suspected issues and observations should be provided to Chevron's landfill monitor. The project applicant may be required to assist Chevron or their designated representative with semi-annual and/or annual report requirements by RWQCB Order No. R2-2012-0015.

Former Fertilizer Plant and Ponds

Look for evidence of ponding water, erosion, liquid leaving or entering the area and report to the property owner. At this time it is unknown if reports are required for the FFPP area.

SUMMARY

Summarized below are the next steps Rincon recommends for the initial design stage:

RECOMMENDED NEXT STEPS

- ☐ Schedule meeting with Chevron and their consultant to discuss conceptual plan for solar array and potential installation limitations and requirements. Obtain all existing permits, agreements, compliance reporting, and other permit conditions related to operation of the current facilities.
- ☐ Schedule meeting with RWQCB, and include Chevron, to discuss conceptual plan. Other agencies may be involved.
- ☐ Obtain documents related to closure of FFPP and post-closure of Landfill 15 (and FFPP, if applicable):
  - Post-closure Maintenance/Monitoring Plan
  - As-built drawings
  - Closure documents for FFPP
  - Parsons, CH2M Hill, and URS, 2003. *Part 1 Site Investigation Report for Selective Data Gathering – Castro Site, Richmond, California*. Volume 1. May 13.
- ☐ Revise documents (if required by RWQCB or other regulatory agency):
  - Post-closure Maintenance/Monitoring Plan
  - Financial Assurance for Post-Closure Maintenance/Monitoring

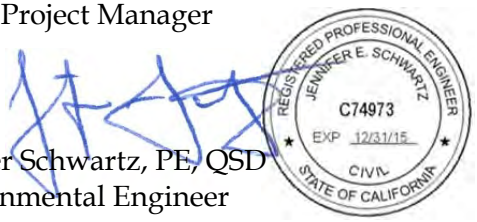
We appreciate your consideration of Rincon for this assignment and welcome the opportunity to meet with you to further discuss our recommendations. If you have any questions or require any additional information, please do not hesitate to contact us.

Sincerely,
RINCON CONSULTANTS, INC.

Nisha Been, AICP
Senior Project Manager

Michael P. Gialketsis
President

Jennifer Schwartz, PE, QSD
Environmental Engineer



Attachments

Attachment A – Figures from RWQCB Order No. R2-2012-0015
Attachment B – Figures from Landfill 15 Solar Array Evaluation (ARCADIS, 2012)
Attachment C – Figures from 2014 Semi-Annual Monitoring Report for the Pond Site (Leidos, 2014)

REFERENCES

ARCADIS, 2009. *Final Draft Human Health Risk Assessment in Support of the CAESAR Project*. Prepared for Chevron Environmental Management Company, November 30.

ARCADIS, 2012. *Landfill 15 Solar Array Installation – Engineering and Regulator Evaluation*. Presentation.

Dames & Moore, 1998. *Closure Certification Report, Landfill 15, Waste Discharge Order, Chevron Richmond Refinery.* Prepared for Chevron Products Company, March 31.

Leidos Engineering, LLC (Leidos), 2014. *Former Chevron Chemical Company Pond Site, Richmond, California, 2014 Semi-Annual Monitoring Report*. Prepared for Chevron Environmental Management Company, August 29.

Regional Water Quality Control Board (RWQCB), 1997. *Order No. 97-049, Updated Waste Discharge Requirement and Rescission of Order 81-65, 91-149, and 91-183 for: Chevron Chemical Company, Pond Site, Richmond Manufacturing Facility, Contra Costa County*.

RWQCB, 2011a. *Order No. R2-2011-0036, Updated Waste Discharge Requirements and Rescission of Order No. 00-0043 for Chevron Products Company, Chevron Richmond Refinery, 814 Chevron Way, Richmond, Contra Costa County*, June 13.

RWQCB, 2011b. *Order No. R2-2011-0049, NPDES No. CA0005134*. Waste discharge requirements for the Richmond Refinery (Discharger: Chevron Products Company and General Chemical), July 14.

RWQCB, 2012. *Order No. R2-2012-0015, Site Cleanup Requirements for Chevron Products Company, Chevron Richmond Refinery, 814 Chevron Way, Richmond, Contra Costa County*, February 13.

Attachment A

Figures from RWQCB Order No. R2-2012-0015

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2012-0015

SITE CLEANUP REQUIREMENTS

FOR

CHEVRON PRODUCTS COMPANY
CHEVRON RICHMOND REFINERY
841 CHEVRON WAY
RICHMOND, CONTRA COSTA COUNTY

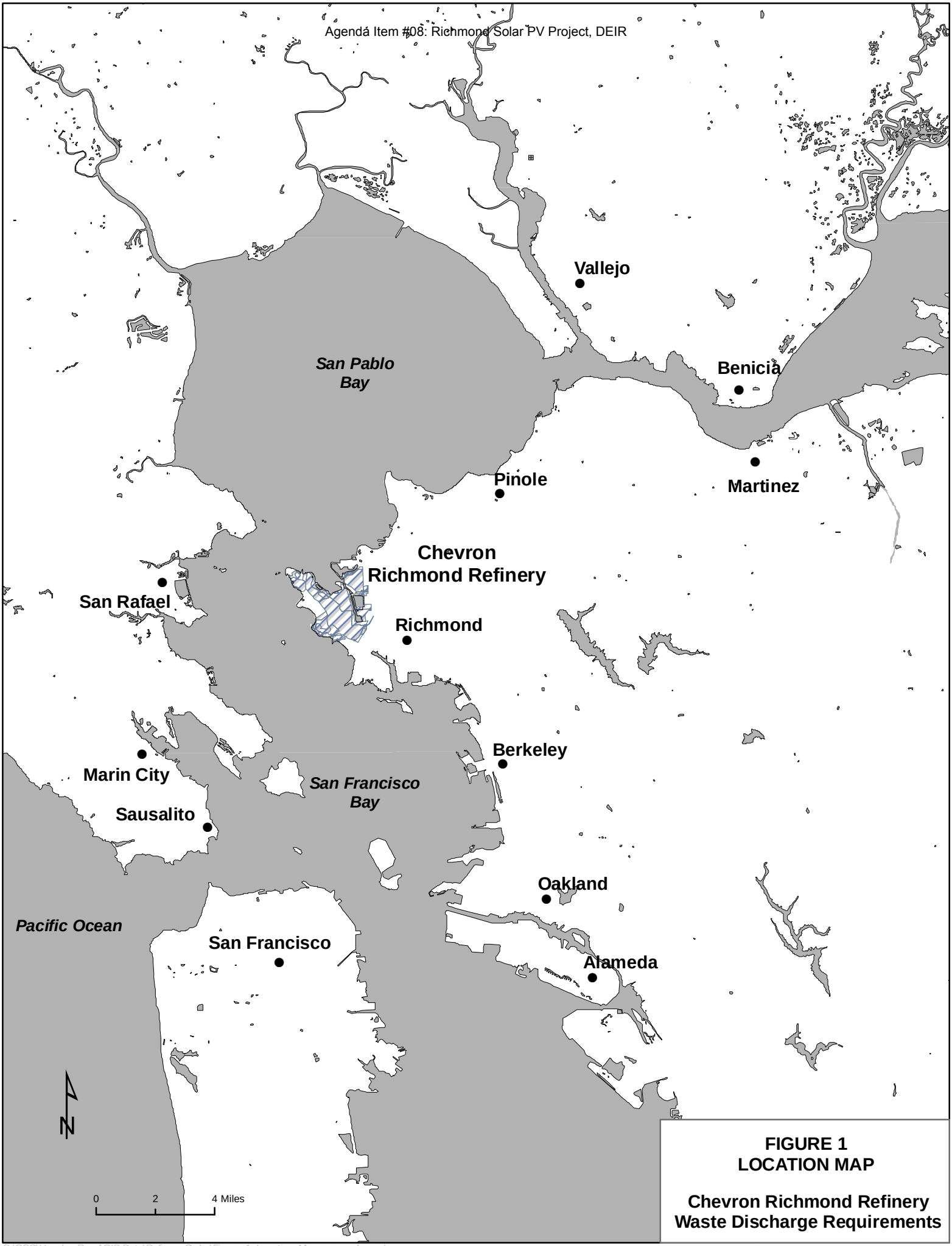


FIGURE 1
LOCATION MAP

Chevron Richmond Refinery
Waste Discharge Requirements

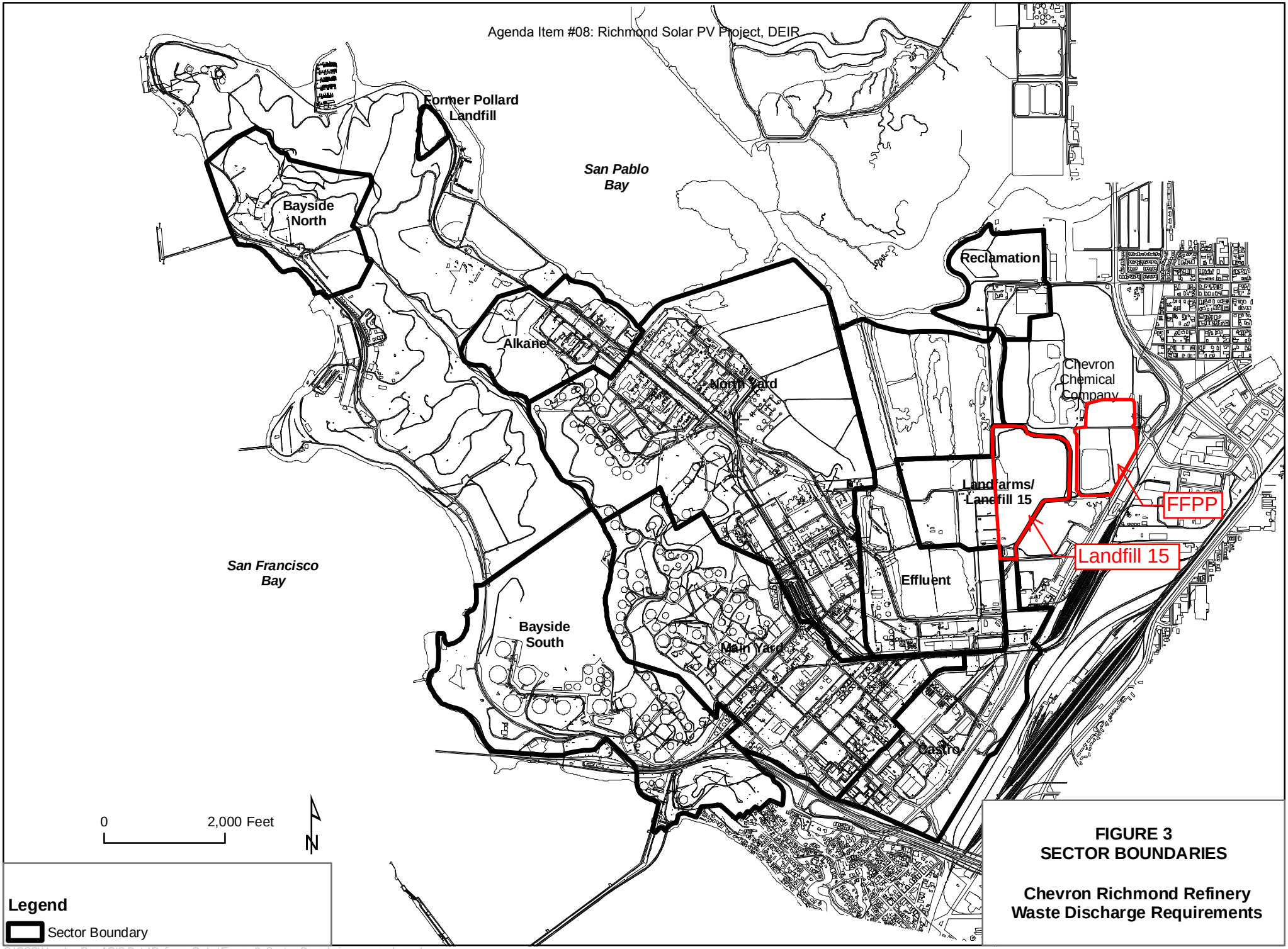


FIGURE 3
SECTOR BOUNDARIES

Chevron Richmond Refinery
Waste Discharge Requirements

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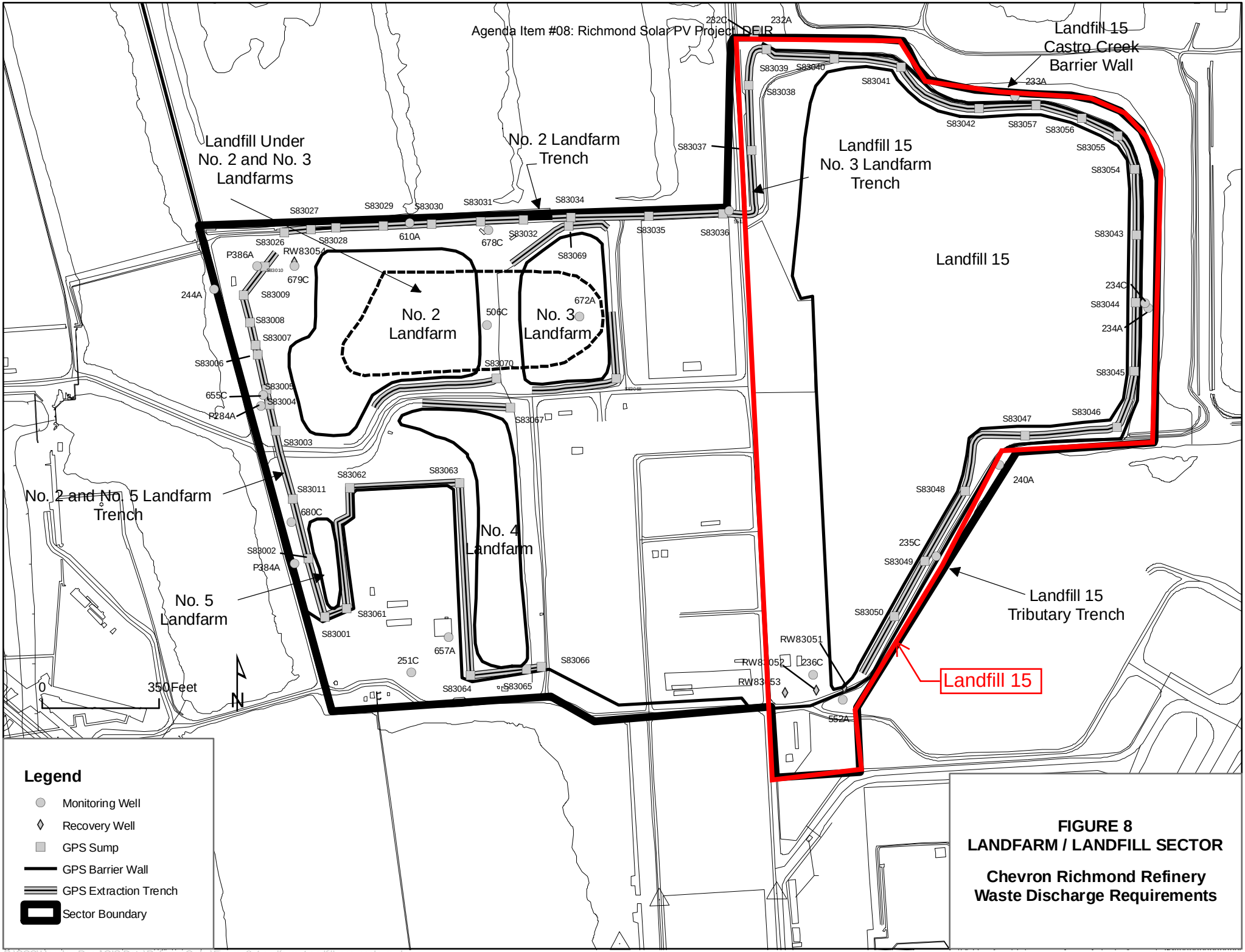

FIGURE 8
LANDFARM / LANDFILL SECTOR

Chevron Richmond Refinery
Waste Discharge Requirements

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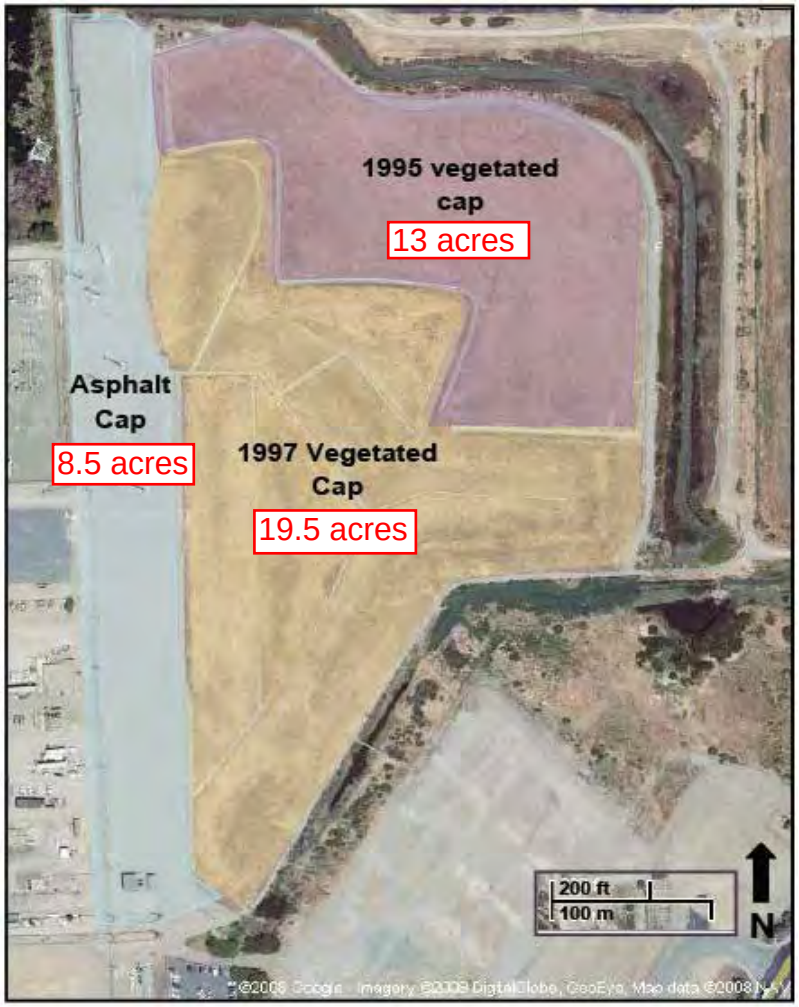
Attachment B

Figures from Landfill 15 Solar Array Evaluation (ARCADIS, 2012)

Landfill 15 Solar Array Installation - Engineering and Regulatory Evaluation

ARCADIS-US
Richmond, CA

Site Closure History

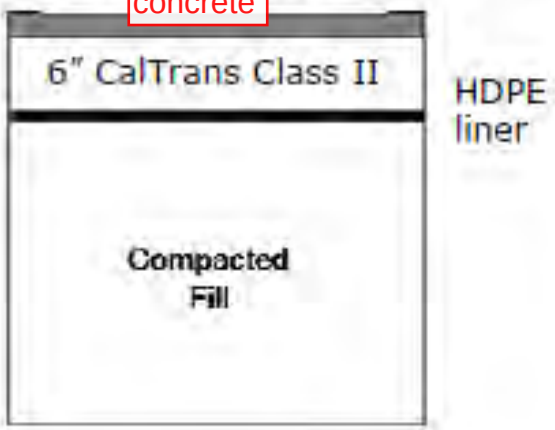


- 2 generations and 3 configurations
  - 1995 – NE activated waste management portion closed and capped with a vegetated cover.
  - 1997 – remainder of site closed with an asphalt or vegetated cover.
  - Groundwater protection, methane venting, and stormwater control systems were installed.

Cover Design Cross Sections

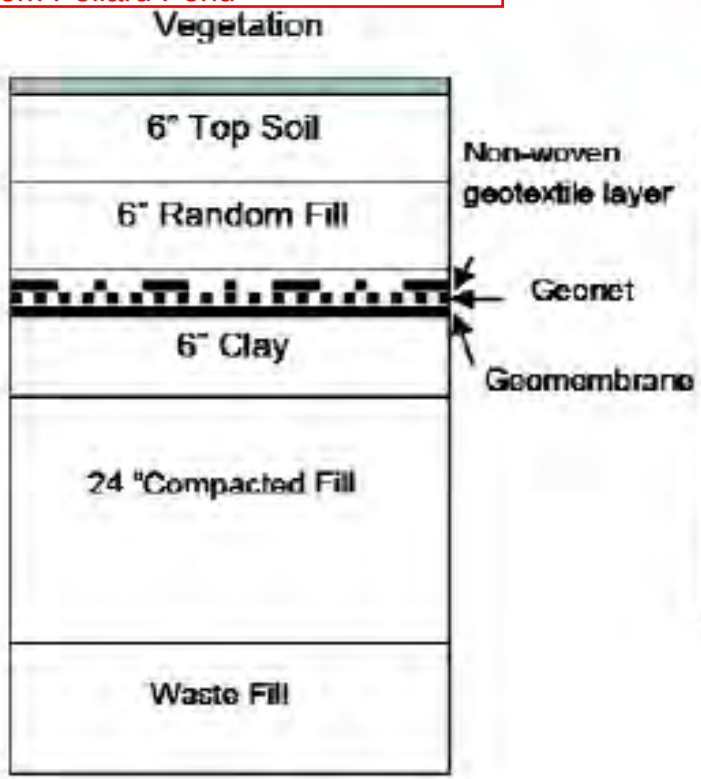
1997 Asphalt Cover

8.5 acres



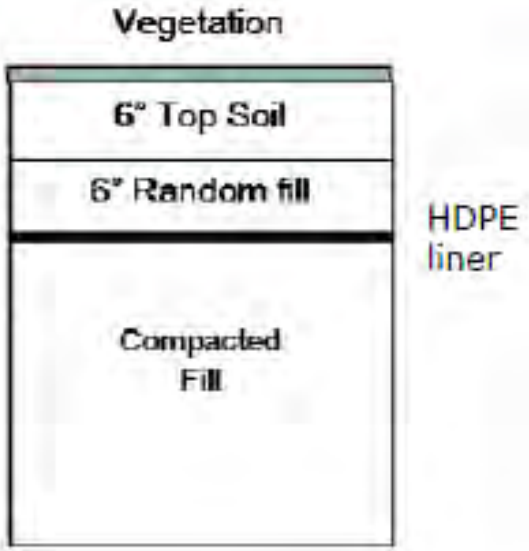
1995 Vegetated Cover

13-acre area which received waste from Pollard Pond



1997 Vegetated Cover

19.5 acres



Attachment C

Figures from 2014 Semi-Annual Monitoring Report for the Pond Site (Leidos, 2014)

FORMER CHEVRON CHEMICAL COMPANY
POND SITE
RICHMOND, CALIFORNIA

2014 SEMI-ANNUAL MONITORING REPORT

August 29, 2014

Prepared for:
Chevron Environmental Management Company
940 Hensley Street
Richmond, California 94801

Prepared by:
Leidos Engineering, LLC
1000 Broadway, Suite 675
Oakland, California 94607

leidos

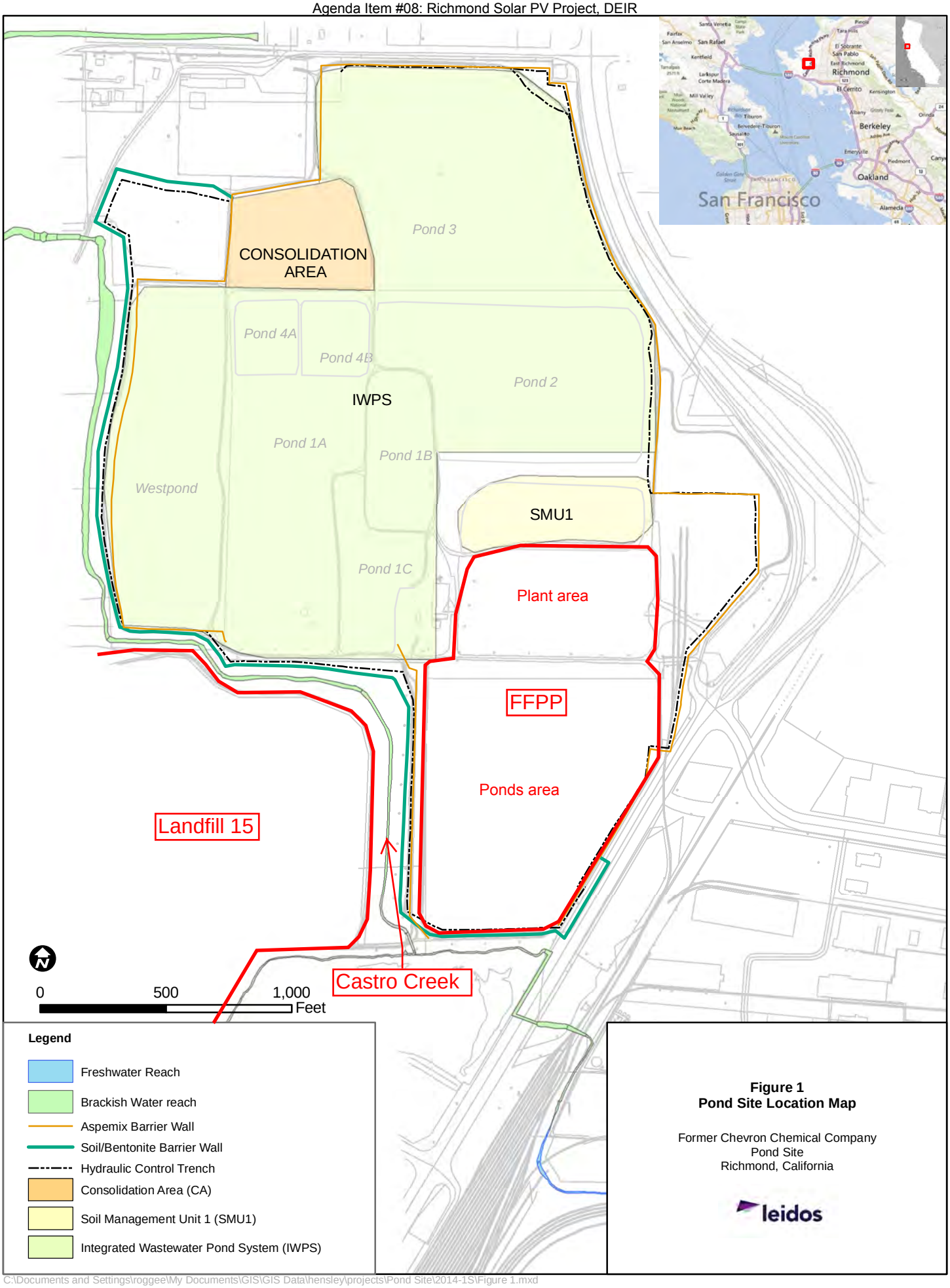


Figure 1
Pond Site Location Map

Former Chevron Chemical Company
Pond Site
Richmond, California

leidos

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Appendix C

Air Quality and Greenhouse Gas Emissions Modeling Results

MCE Richmond Solar PV

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	60.00	Acre	60.00	2,613,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - City Park used to show that no buildings or other land uses would be onsite as this is a solar facility.

Construction Phase - 1.5 year total construction. Phase I and Phase II overlap.

Off-road Equipment - Grading on Fertilizer Pond to remove berm

Off-road Equipment - Install Solar Panels - no dozers or cranes

Trips and VMT - 100 workers during construction per day.

Grading - Phase I - 500 CY of fill on 13 acres of landfill
Phase II Grading - Removal of berm and redistributing 3400 acres of berm soil on low areas of Fertilizer pond site (no import or export)

Vehicle Trips - 2 Maintenance Truck trips per month for monthly maintenance. Worst case day = 2 trips per day.

Vechicle Emission Factors - Maintenance truck

Vechicle Emission Factors - Maintenance Truck only

Vechicle Emission Factors - Maintenance Truck only

Consumer Products - None

Area Coating - None

Water And Wastewater - No water/wastewater

Solid Waste - No waste

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	3920400	0
tblConstructionPhase	NumDays	1,110.00	322.00
tblConstructionPhase	NumDays	40.00	120.00
tblConstructionPhase	PhaseEndDate	10/23/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	6/16/2016	7/28/2016
tblConstructionPhase	PhaseStartDate	7/29/2016	4/7/2016
tblConsumerProducts	ROG_EF	2.14E-05	1E-29
tblGrading	AcresOfGrading	0.00	60.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	5.16	0.00
tblVehicleEF	HHD	0.02	0.00
tblVehicleEF	HHD	0.02	0.00
tblVehicleEF	HHD	0.02	0.00
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tblVehicleEF	MHD	9.6710e-003	0.00
tblVehicleEF	MHD	9.6710e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	WD_TR	1.59	2.00
tblWater	OutdoorWaterUseRate	71,488,880.98	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.7497	13.0277	17.5225	0.0288	2.1845	0.5337	2.7182	0.8364	0.4967	1.3331	0.0000	2,455.3625	2,455.3625	0.2427	0.0000	2,460.4587
2017	0.8134	5.3073	8.8219	0.0167	0.8290	0.1748	1.0038	0.2241	0.1630	0.3872	0.0000	1,368.9694	1,368.9694	0.0907	0.0000	1,370.8746
Total	**2.5631**	**18.3350**	**26.3445**	**0.0455**	**3.0136**	**0.7085**	**3.7220**	**1.0605**	**0.6597**	**1.7202**	**0.0000**	**3,824.3318**	**3,824.3318**	**0.3334**	**0.0000**	**3,831.3333**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.7497	13.0277	17.5225	0.0288	1.6093	0.5337	2.1429	0.5309	0.4967	1.0276	0.0000	2,455.3617	2,455.3617	0.2427	0.0000	2,460.4579
2017	0.8134	5.3073	8.8219	0.0167	0.8290	0.1748	1.0038	0.2241	0.1630	0.3872	0.0000	1,368.9691	1,368.9691	0.0907	0.0000	1,370.8743
Total	**2.5631**	**18.3350**	**26.3445**	**0.0455**	**2.4383**	**0.7085**	**3.1468**	**0.7550**	**0.6597**	**1.4147**	**0.0000**	**3,824.3308**	**3,824.3308**	**0.3334**	**0.0000**	**3,831.3322**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.09**	**0.00**	**15.46**	**28.81**	**0.00**	**17.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5438**	**0.4943**	**0.7491**	**2.2800e-003**	**0.0958**	**5.2800e-003**	**0.1011**	**0.0260**	**4.8600e-003**	**0.0309**	**0.0000**	**200.7838**	**200.7838**	**6.6700e-003**	**0.0000**	**200.9240**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5438**	**0.4943**	**0.7491**	**2.2800e-003**	**0.0958**	**5.2800e-003**	**0.1011**	**0.0260**	**4.8600e-003**	**0.0309**	**0.0000**	**200.7838**	**200.7838**	**6.6700e-003**	**0.0000**	**200.9240**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep	Site Preparation	1/1/2016	7/28/2016	5	120	
2	Solar Installation	Building Construction	4/7/2016	6/30/2017	5	322	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep	Concrete/Industrial Saws	1	8.00	81	0.73
Site Prep	Excavators	3	8.00	162	0.38
Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Site Prep	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Solar Installation	Cranes	1	7.00	226	0.29
Solar Installation	Forklifts	3	8.00	89	0.20
Solar Installation	Generator Sets	1	8.00	84	0.74
Solar Installation	Scrapers	1	8.00	361	0.48
Solar Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Solar Installation	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep	10	25.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Solar Installation	8	1,098.00	428.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9431	0.0000	0.9431	0.5008	0.0000	0.5008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4238	4.4007	3.3511	3.9300e-003		0.2471	0.2471		0.2294	0.2294	0.0000	366.3207	366.3207	0.1022	0.0000	368.4677
Total	**0.4238**	**4.4007**	**3.3511**	**3.9300e-003**	**0.9431**	**0.2471**	**1.1902**	**0.5008**	**0.2294**	**0.7302**	**0.0000**	**366.3207**	**366.3207**	**0.1022**	**0.0000**	**368.4677**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0600e-003	0.0104	0.1014	2.0000e-004	0.0171	1.4000e-004	0.0172	4.5400e-003	1.3000e-004	4.6700e-003	0.0000	15.4164	15.4164	8.5000e-004	0.0000	15.4343
Total	**7.0600e-003**	**0.0104**	**0.1014**	**2.0000e-004**	**0.0171**	**1.4000e-004**	**0.0172**	**4.5400e-003**	**1.3000e-004**	**4.6700e-003**	**0.0000**	**15.4164**	**15.4164**	**8.5000e-004**	**0.0000**	**15.4343**

3.2 Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3678	0.0000	0.3678	0.1953	0.0000	0.1953	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4238	4.4007	3.3511	3.9300e-003		0.2471	0.2471		0.2294	0.2294	0.0000	366.3203	366.3203	0.1022	0.0000	368.4672
Total	**0.4238**	**4.4007**	**3.3511**	**3.9300e-003**	**0.3678**	**0.2471**	**0.6149**	**0.1953**	**0.2294**	**0.4247**	**0.0000**	**366.3203**	**366.3203**	**0.1022**	**0.0000**	**368.4672**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0600e-003	0.0104	0.1014	2.0000e-004	0.0171	1.4000e-004	0.0172	4.5400e-003	1.3000e-004	4.6700e-003	0.0000	15.4164	15.4164	8.5000e-004	0.0000	15.4343
Total	**7.0600e-003**	**0.0104**	**0.1014**	**2.0000e-004**	**0.0171**	**1.4000e-004**	**0.0172**	**4.5400e-003**	**1.3000e-004**	**4.6700e-003**	**0.0000**	**15.4164**	**15.4164**	**8.5000e-004**	**0.0000**	**15.4343**

3.3 Solar Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4066	3.9180	2.4583	3.5200e-003		0.2179	0.2179		0.2041	0.2041	0.0000	321.4296	321.4296	0.0845	0.0000	323.2039
Total	**0.4066**	**3.9180**	**2.4583**	**3.5200e-003**		**0.2179**	**0.2179**		**0.2041**	**0.2041**	**0.0000**	**321.4296**	**321.4296**	**0.0845**	**0.0000**	**323.2039**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.5152	4.1151	5.9136	9.7600e-003	0.2647	0.0608	0.3254	0.0758	0.0559	0.1317	0.0000	885.5234	885.5234	7.0900e-003	0.0000	885.6722
Worker	0.3972	0.5835	5.6982	0.0114	0.9597	7.8200e-003	0.9675	0.2552	7.1700e-003	0.2624	0.0000	866.6724	866.6724	0.0480	0.0000	867.6807
Total	**0.9123**	**4.6986**	**11.6118**	**0.0211**	**1.2244**	**0.0686**	**1.2930**	**0.3310**	**0.0630**	**0.3940**	**0.0000**	**1,752.1958**	**1,752.1958**	**0.0551**	**0.0000**	**1,753.3528**

3.3 Solar Installation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4066	3.9180	2.4583	3.5200e-003		0.2179	0.2179		0.2041	0.2041	0.0000	321.4292	321.4292	0.0845	0.0000	323.2035
Total	**0.4066**	**3.9180**	**2.4583**	**3.5200e-003**		**0.2179**	**0.2179**		**0.2041**	**0.2041**	**0.0000**	**321.4292**	**321.4292**	**0.0845**	**0.0000**	**323.2035**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.5152	4.1151	5.9136	9.7600e-003	0.2647	0.0608	0.3254	0.0758	0.0559	0.1317	0.0000	885.5234	885.5234	7.0900e-003	0.0000	885.6722
Worker	0.3972	0.5835	5.6982	0.0114	0.9597	7.8200e-003	0.9675	0.2552	7.1700e-003	0.2624	0.0000	866.6724	866.6724	0.0480	0.0000	867.6807
Total	**0.9123**	**4.6986**	**11.6118**	**0.0211**	**1.2244**	**0.0686**	**1.2930**	**0.3310**	**0.0630**	**0.3940**	**0.0000**	**1,752.1958**	**1,752.1958**	**0.0551**	**0.0000**	**1,753.3528**

3.3 Solar Installation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2526	2.4556	1.5884	2.3800e-003		0.1342	0.1342		0.1257	0.1257	0.0000	214.9924	214.9924	0.0565	0.0000	216.1787
Total	**0.2526**	**2.4556**	**1.5884**	**2.3800e-003**		**0.1342**	**0.1342**		**0.1257**	**0.1257**	**0.0000**	**214.9924**	**214.9924**	**0.0565**	**0.0000**	**216.1787**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3233	2.4983	3.8089	6.6000e-003	0.1792	0.0356	0.2148	0.0513	0.0327	0.0841	0.0000	589.5544	589.5544	4.5500e-003	0.0000	589.6501
Worker	0.2375	0.3535	3.4247	7.7000e-003	0.6498	5.0500e-003	0.6548	0.1728	4.6500e-003	0.1775	0.0000	564.4225	564.4225	0.0297	0.0000	565.0458
Total	**0.5608**	**2.8518**	**7.2335**	**0.0143**	**0.8290**	**0.0407**	**0.8697**	**0.2241**	**0.0374**	**0.2615**	**0.0000**	**1,153.9770**	**1,153.9770**	**0.0342**	**0.0000**	**1,154.6959**

3.3 Solar Installation - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2526	2.4555	1.5884	2.3800e-003		0.1342	0.1342		0.1257	0.1257	0.0000	214.9921	214.9921	0.0565	0.0000	216.1784
Total	**0.2526**	**2.4555**	**1.5884**	**2.3800e-003**		**0.1342**	**0.1342**		**0.1257**	**0.1257**	**0.0000**	**214.9921**	**214.9921**	**0.0565**	**0.0000**	**216.1784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3233	2.4983	3.8089	6.6000e-003	0.1792	0.0356	0.2148	0.0513	0.0327	0.0841	0.0000	589.5544	589.5544	4.5500e-003	0.0000	589.6501
Worker	0.2375	0.3535	3.4247	7.7000e-003	0.6498	5.0500e-003	0.6548	0.1728	4.6500e-003	0.1775	0.0000	564.4225	564.4225	0.0297	0.0000	565.0458
Total	**0.5608**	**2.8518**	**7.2335**	**0.0143**	**0.8290**	**0.0407**	**0.8697**	**0.2241**	**0.0374**	**0.2615**	**0.0000**	**1,153.9770**	**1,153.9770**	**0.0342**	**0.0000**	**1,154.6959**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Unmitigated	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	120.00	0.00	0.00	250,411	250,411
Total	120.00	0.00	0.00	250,411	250,411

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Unmitigated	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4543					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.4543**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4543					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.4543**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

MCE Richmond Solar PV

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	60.00	Acre	60.00	2,613,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - City Park used to show that no buildings or other land uses would be onsite as this is a solar facility.

Construction Phase - 1.5 year total construction. Phase I and Phase II overlap.

Off-road Equipment - Grading on Fertilizer Pond to remove berm

Off-road Equipment - Install Solar Panels - no dozers or cranes

Trips and VMT - 100 workers during construction per day.

Grading - Phase I - 500 CY of fill on 13 acres of landfill
Phase II Grading - Removal of berm and redistributing 2800 acres of berm soil on low areas of Fertilizer pond site (no import or export)

Vehicle Trips - 2 Maintenance Truck trips per month for monthly maintenance. Worst case day = 2 trips per day.

Vechicle Emission Factors - Maintenance truck

Vechicle Emission Factors - Maintenance Truck only

Vechicle Emission Factors - Maintenance Truck only

Consumer Products - None

Area Coating - None

Water And Wastewater - No water/wastewater

Solid Waste - No waste

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	3920400	0
tblConstructionPhase	NumDays	1,110.00	322.00
tblConstructionPhase	NumDays	40.00	120.00
tblConstructionPhase	PhaseEndDate	10/23/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	6/16/2016	7/28/2016
tblConstructionPhase	PhaseStartDate	7/29/2016	4/7/2016
tblConsumerProducts	ROG_EF	2.14E-05	1E-29
tblGrading	AcresOfGrading	0.00	60.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	5.16	0.00
tblVehicleEF	HHD	0.02	0.00
tblVehicleEF	HHD	0.02	0.00
tblVehicleEF	HHD	0.02	0.00
tblVehicleEF	LDA	0.53	0.00
tblVehicleEF	LDA	0.53	0.00
tblVehicleEF	LDA	0.53	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	1.00
tblVehicleEF	LHD1	0.04	1.00
tblVehicleEF	LHD1	0.04	1.00
tblVehicleEF	LHD2	4.8880e-003	0.00
tblVehicleEF	LHD2	4.8880e-003	0.00
tblVehicleEF	LHD2	4.8880e-003	0.00
tblVehicleEF	MCY	6.3590e-003	0.00
tblVehicleEF	MCY	6.3590e-003	0.00
tblVehicleEF	MCY	6.3590e-003	0.00
tblVehicleEF	MDV	0.15	0.00
tblVehicleEF	MDV	0.15	0.00
tblVehicleEF	MDV	0.15	0.00
tblVehicleEF	MH	2.0520e-003	0.00

tblVehicleEF	MH	2.0520e-003	0.00
tblVehicleEF	MH	2.0520e-003	0.00
tblVehicleEF	MHD	9.6710e-003	0.00
tblVehicleEF	MHD	9.6710e-003	0.00
tblVehicleEF	MHD	9.6710e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	OBUS	1.2210e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	SBUS	2.1010e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleEF	UBUS	1.4870e-003	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	WD_TR	1.59	2.00
tblWater	OutdoorWaterUseRate	71,488,880.98	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.7497	13.0277	17.5225	0.0288	2.1845	0.5337	2.7182	0.8364	0.4967	1.3331	0.0000	2,455.3625	2,455.3625	0.2427	0.0000	2,460.4587
2017	0.8134	5.3073	8.8219	0.0167	0.8290	0.1748	1.0038	0.2241	0.1630	0.3872	0.0000	1,368.9694	1,368.9694	0.0907	0.0000	1,370.8746
Total	**2.5631**	**18.3350**	**26.3445**	**0.0455**	**3.0136**	**0.7085**	**3.7220**	**1.0605**	**0.6597**	**1.7202**	**0.0000**	**3,824.3318**	**3,824.3318**	**0.3334**	**0.0000**	**3,831.3333**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.7497	13.0277	17.5225	0.0288	1.6093	0.5337	2.1429	0.5309	0.4967	1.0276	0.0000	2,455.3617	2,455.3617	0.2427	0.0000	2,460.4579
2017	0.8134	5.3073	8.8219	0.0167	0.8290	0.1748	1.0038	0.2241	0.1630	0.3872	0.0000	1,368.9691	1,368.9691	0.0907	0.0000	1,370.8743
Total	**2.5631**	**18.3350**	**26.3445**	**0.0455**	**2.4383**	**0.7085**	**3.1468**	**0.7550**	**0.6597**	**1.4147**	**0.0000**	**3,824.3308**	**3,824.3308**	**0.3334**	**0.0000**	**3,831.3322**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**19.09**	**0.00**	**15.46**	**28.81**	**0.00**	**17.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5438**	**0.4943**	**0.7491**	**2.2800e-003**	**0.0958**	**5.2800e-003**	**0.1011**	**0.0260**	**4.8600e-003**	**0.0309**	**0.0000**	**200.7838**	**200.7838**	**6.6700e-003**	**0.0000**	**200.9240**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5438**	**0.4943**	**0.7491**	**2.2800e-003**	**0.0958**	**5.2800e-003**	**0.1011**	**0.0260**	**4.8600e-003**	**0.0309**	**0.0000**	**200.7838**	**200.7838**	**6.6700e-003**	**0.0000**	**200.9240**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep	Site Preparation	1/1/2016	7/28/2016	5	120	
2	Solar Installation	Building Construction	4/7/2016	6/30/2017	5	322	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep	Concrete/Industrial Saws	1	8.00	81	0.73
Site Prep	Excavators	3	8.00	162	0.38
Site Prep	Rubber Tired Dozers	2	8.00	255	0.40
Site Prep	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Solar Installation	Cranes	1	7.00	226	0.29
Solar Installation	Forklifts	3	8.00	89	0.20
Solar Installation	Generator Sets	1	8.00	84	0.74
Solar Installation	Scrapers	1	8.00	361	0.48
Solar Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Solar Installation	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep	10	25.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Solar Installation	8	1,098.00	428.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Prep - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9431	0.0000	0.9431	0.5008	0.0000	0.5008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4238	4.4007	3.3511	3.9300e-003		0.2471	0.2471		0.2294	0.2294	0.0000	366.3207	366.3207	0.1022	0.0000	368.4677
Total	**0.4238**	**4.4007**	**3.3511**	**3.9300e-003**	**0.9431**	**0.2471**	**1.1902**	**0.5008**	**0.2294**	**0.7302**	**0.0000**	**366.3207**	**366.3207**	**0.1022**	**0.0000**	**368.4677**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0600e-003	0.0104	0.1014	2.0000e-004	0.0171	1.4000e-004	0.0172	4.5400e-003	1.3000e-004	4.6700e-003	0.0000	15.4164	15.4164	8.5000e-004	0.0000	15.4343
Total	**7.0600e-003**	**0.0104**	**0.1014**	**2.0000e-004**	**0.0171**	**1.4000e-004**	**0.0172**	**4.5400e-003**	**1.3000e-004**	**4.6700e-003**	**0.0000**	**15.4164**	**15.4164**	**8.5000e-004**	**0.0000**	**15.4343**

3.2 Site Prep - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3678	0.0000	0.3678	0.1953	0.0000	0.1953	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4238	4.4007	3.3511	3.9300e-003		0.2471	0.2471		0.2294	0.2294	0.0000	366.3203	366.3203	0.1022	0.0000	368.4672
Total	**0.4238**	**4.4007**	**3.3511**	**3.9300e-003**	**0.3678**	**0.2471**	**0.6149**	**0.1953**	**0.2294**	**0.4247**	**0.0000**	**366.3203**	**366.3203**	**0.1022**	**0.0000**	**368.4672**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0600e-003	0.0104	0.1014	2.0000e-004	0.0171	1.4000e-004	0.0172	4.5400e-003	1.3000e-004	4.6700e-003	0.0000	15.4164	15.4164	8.5000e-004	0.0000	15.4343
Total	**7.0600e-003**	**0.0104**	**0.1014**	**2.0000e-004**	**0.0171**	**1.4000e-004**	**0.0172**	**4.5400e-003**	**1.3000e-004**	**4.6700e-003**	**0.0000**	**15.4164**	**15.4164**	**8.5000e-004**	**0.0000**	**15.4343**

3.3 Solar Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4066	3.9180	2.4583	3.5200e-003		0.2179	0.2179		0.2041	0.2041	0.0000	321.4296	321.4296	0.0845	0.0000	323.2039
Total	**0.4066**	**3.9180**	**2.4583**	**3.5200e-003**		**0.2179**	**0.2179**		**0.2041**	**0.2041**	**0.0000**	**321.4296**	**321.4296**	**0.0845**	**0.0000**	**323.2039**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.5152	4.1151	5.9136	9.7600e-003	0.2647	0.0608	0.3254	0.0758	0.0559	0.1317	0.0000	885.5234	885.5234	7.0900e-003	0.0000	885.6722
Worker	0.3972	0.5835	5.6982	0.0114	0.9597	7.8200e-003	0.9675	0.2552	7.1700e-003	0.2624	0.0000	866.6724	866.6724	0.0480	0.0000	867.6807
Total	**0.9123**	**4.6986**	**11.6118**	**0.0211**	**1.2244**	**0.0686**	**1.2930**	**0.3310**	**0.0630**	**0.3940**	**0.0000**	**1,752.1958**	**1,752.1958**	**0.0551**	**0.0000**	**1,753.3528**

3.3 Solar Installation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4066	3.9180	2.4583	3.5200e-003		0.2179	0.2179		0.2041	0.2041	0.0000	321.4292	321.4292	0.0845	0.0000	323.2035
Total	**0.4066**	**3.9180**	**2.4583**	**3.5200e-003**		**0.2179**	**0.2179**		**0.2041**	**0.2041**	**0.0000**	**321.4292**	**321.4292**	**0.0845**	**0.0000**	**323.2035**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.5152	4.1151	5.9136	9.7600e-003	0.2647	0.0608	0.3254	0.0758	0.0559	0.1317	0.0000	885.5234	885.5234	7.0900e-003	0.0000	885.6722
Worker	0.3972	0.5835	5.6982	0.0114	0.9597	7.8200e-003	0.9675	0.2552	7.1700e-003	0.2624	0.0000	866.6724	866.6724	0.0480	0.0000	867.6807
Total	**0.9123**	**4.6986**	**11.6118**	**0.0211**	**1.2244**	**0.0686**	**1.2930**	**0.3310**	**0.0630**	**0.3940**	**0.0000**	**1,752.1958**	**1,752.1958**	**0.0551**	**0.0000**	**1,753.3528**

3.3 Solar Installation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2526	2.4556	1.5884	2.3800e-003		0.1342	0.1342		0.1257	0.1257	0.0000	214.9924	214.9924	0.0565	0.0000	216.1787
Total	**0.2526**	**2.4556**	**1.5884**	**2.3800e-003**		**0.1342**	**0.1342**		**0.1257**	**0.1257**	**0.0000**	**214.9924**	**214.9924**	**0.0565**	**0.0000**	**216.1787**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3233	2.4983	3.8089	6.6000e-003	0.1792	0.0356	0.2148	0.0513	0.0327	0.0841	0.0000	589.5544	589.5544	4.5500e-003	0.0000	589.6501
Worker	0.2375	0.3535	3.4247	7.7000e-003	0.6498	5.0500e-003	0.6548	0.1728	4.6500e-003	0.1775	0.0000	564.4225	564.4225	0.0297	0.0000	565.0458
Total	**0.5608**	**2.8518**	**7.2335**	**0.0143**	**0.8290**	**0.0407**	**0.8697**	**0.2241**	**0.0374**	**0.2615**	**0.0000**	**1,153.9770**	**1,153.9770**	**0.0342**	**0.0000**	**1,154.6959**

3.3 Solar Installation - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2526	2.4555	1.5884	2.3800e-003		0.1342	0.1342		0.1257	0.1257	0.0000	214.9921	214.9921	0.0565	0.0000	216.1784
Total	**0.2526**	**2.4555**	**1.5884**	**2.3800e-003**		**0.1342**	**0.1342**		**0.1257**	**0.1257**	**0.0000**	**214.9921**	**214.9921**	**0.0565**	**0.0000**	**216.1784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3233	2.4983	3.8089	6.6000e-003	0.1792	0.0356	0.2148	0.0513	0.0327	0.0841	0.0000	589.5544	589.5544	4.5500e-003	0.0000	589.6501
Worker	0.2375	0.3535	3.4247	7.7000e-003	0.6498	5.0500e-003	0.6548	0.1728	4.6500e-003	0.1775	0.0000	564.4225	564.4225	0.0297	0.0000	565.0458
Total	**0.5608**	**2.8518**	**7.2335**	**0.0143**	**0.8290**	**0.0407**	**0.8697**	**0.2241**	**0.0374**	**0.2615**	**0.0000**	**1,153.9770**	**1,153.9770**	**0.0342**	**0.0000**	**1,154.6959**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229
Unmitigated	0.0895	0.4943	0.7485	2.2800e-003	0.0958	5.2800e-003	0.1011	0.0260	4.8600e-003	0.0309	0.0000	200.7827	200.7827	6.6700e-003	0.0000	200.9229

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	120.00	0.00	0.00	250,411	250,411
Total	120.00	0.00	0.00	250,411	250,411

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Unmitigated	0.4543	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4543					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.4543**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4543					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.0000e-005	1.0000e-005	5.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0700e-003	1.0700e-003	0.0000	0.0000	1.1400e-003
Total	**0.4543**	**1.0000e-005**	**5.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0700e-003**	**1.0700e-003**	**0.0000**	**0.0000**	**1.1400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Use	Energy Use (MWh/day)	CO2	N2O	Ch4	
Electricity	55.6				
Emission Factor (lbs/MWh)		589.00	0.01	0.04	
Electricity Offseet from Grid (lbs/day)		32,748.40	0.56	2.22	
Metric Tons Per Year		5,421.86	0.09	0.37	
Metric Tons CO2E per year		5,421.86	28.54	7.73	
Total Metric tons CO2E Per year					**5,458.13**

GHG emissions based on emission factors from the California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures, September 2010 and California Climate Action Registry (CCAR) Database, Power/Utility Protocol (PUP) Report, 2007

DRAFT DOCUMENT

Marin Clean Energy
Board of Directors Meeting
Thursday, October 15, 2015
7:00 P.M.

The Charles F. McGlashan Board Room
1125 Tamalpais Avenue, San Rafael, CA 94901

1125 Tamalpais Avenue
San Rafael, CA 94901

1 (888) 632-3674
mceCleanEnergy.org

1. Board Announcements (Discussion)

2. Public Open Time (Discussion)

3. Report from Chief Executive Officer (Discussion)

4. Consent Calendar (Discussion/Action)
   - C.1 9.17.15 Board Retreat Meeting Minutes
   - C.2 Approved Contracts Update
   - C.3 Monthly Budget Report
   - C.4 First Agreement with D.A. Jordan, DHA

5. Presentation by Mainstreet Moms (Discussion)

6. Presentation of The Charles F. McGlashan Advocacy Award (Discussion/Action)

7. Updated Integrated Resource Plan (Discussion/Action)

Agenda material can be inspected 1125 Tamalpais Avenue, San Rafael, CA 94903 on the Mission Avenue side of the building. The meeting facilities are in accessible locations. If you are a person with a disability and require this document in an alternate format (example: Braille, Large Print, Audiotape, CD-ROM), you may request it by using the contact information below. If you require accommodation (example: ASL Interpreter, reader, note taker) to participate in any MCE program, service or activity, you may request an accommodation by calling (415) 464-6032 (voice) or 711 for the California Relay Service or by e-mail at djackson@mceCleanEnergy.org not less than four work days in advance of the event.

1125 Tamalpais Avenue
San Rafael, CA 94901

1 (888) 632-3674
mceCleanEnergy.org

DRAFT DOCUMENT

Marin Clean Energy
Board of Directors Meeting
Thursday, October 15, 2015
7:00 P.M.

The Charles F. McGlashan Board Room
1125 Tamalpais Avenue, San Rafael, CA 94901

8. Update on MCE Solar One Draft Environmental Impact Report (Discussion/Action)

9. MCE Compensation Analysis (Discussion/Action)

10. Board Member Assignment to Ad Hoc Committees (Discussion/Action)

11. Regulatory and Legislative Updates (Discussion)

12. Board Member & Staff Matters (Discussion)

13. Adjourn

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