

File No. 191081

Committee Item No. 3

Board Item No. 21

COMMITTEE/BOARD OF SUPERVISORS

AGENDA PACKET CONTENTS LIST

Committee: Budget & Finance Committee

Date November 13, 2019

Board of Supervisors Meeting

Date November 19, 2019

Cmte Board

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| <input type="checkbox"/> | <input type="checkbox"/> | Motion |
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| <input type="checkbox"/> | <input type="checkbox"/> | Legislative Digest |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Budget and Legislative Analyst Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Youth Commission Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Introduction Form |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Grant Information Form |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Grant Budget |
| <input type="checkbox"/> | <input type="checkbox"/> | Subcontract Budget |
| <input type="checkbox"/> | <input type="checkbox"/> | Contract/Agreement |
| <input type="checkbox"/> | <input type="checkbox"/> | Form 126 – Ethics Commission |
| <input type="checkbox"/> | <input type="checkbox"/> | Award Letter |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Application |
| <input type="checkbox"/> | <input type="checkbox"/> | Public Correspondence |

OTHER (Use back side if additional space is needed)

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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>San Francisco Public Utilities Commission Resolution</u> |
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Completed by: Linda Wong

Date November 8, 2019

Completed by: Linda Wong

Date November 15, 2019

1 [Accept and Expend Grant - California Governor's Office of Emergency Services - Hazard
2 Mitigation Grant Program - \$488,259]

3 Resolution authorizing the San Francisco Public Utilities Commission General Manager
4 to accept and expend a Hazard Mitigation Program grant in the amount of \$488,259
5 from the Federal Emergency Management Agency through the California Governor's
6 Office of Emergency Services for Phase Two of the Early Intake Switchyard Slope
7 Stabilization Project for the grant period of August 6, 2018, through April 30, 2020.
8

9 WHEREAS, The San Francisco Public Utilities Commission (SFPUC) operates and
10 maintains the Early Intake Switchyard, a substation located along the Tuolumne River in
11 Groveland, California that is responsible for the transmission and distribution of the power
12 supply from Kirkwood and Holm Power Houses to Moccasin and the local distribution to Hetch
13 Hetchy Water and Power's upcountry facilities; and

14 WHEREAS, The 2013 Rim Fire severely burned and denuded the slopes of vegetation
15 above the Early Intake Switchyard, which began experiencing a high rate of rock falls and
16 debris flow; and

17 WHEREAS, The Rim Fire was declared a major federal disaster, and as a result, the
18 State of California became eligible to apply for Hazard Mitigation Grant Program (HMGP)
19 funds from the Federal Emergency Management Agency (FEMA); and

20 WHEREAS, In June 2014, the San Francisco Public Utilities Commission (SFPUC)
21 submitted, through the California Governor's Office of Emergency Services (Cal OES), a sub-
22 application (FEMA-4158-DR-CA, Project #0272, FIPS #075-00000) for a Hazard Mitigation
23 Grant from FEMA to help fund the implementation of the Early Intake Slope Stabilization
24 Project (the Project) to reduce the risk of slope hazards which may cause damage to the Early
25 Intake Switchyard and loss of power transmission capability to the City; and

1 WHEREAS, In June 2016, FEMA awarded, through Cal OES, SFPUC a grant of
2 \$404,208 in federal funds for Pre-Award and Phase One of the Early Intake Slope
3 Stabilization project; and

4 WHEREAS, On September 13, 2016, the SFPUC approved Resolution No. 16-0192
5 authorizing the SFPUC General Manager to request approval from the Board of Supervisors
6 to accept and expend HMGP funds from FEMA in an amount not to exceed \$404,208; and

7 WHEREAS, On February 28, 2017, the Board of Supervisors passed Resolution No.
8 55-17 authorizing the SFPUC General Manager to accept and expend the HMGP grant in the
9 amount of \$404,208 for Phase One of the Project; and

10 WHEREAS, The Project is divided into two phases: (1) Pre-Award and Phase One for
11 environmental studies, CEQA review, and engineering design, and (2) Phase Two for
12 construction; and

13 WHEREAS, Pre-award and Phase One activities for the Project are now complete; and

14 WHEREAS, On August 6, 2018, FEMA approved, through Cal OES, HMGP grant
15 funding (FEMA-4158-DR-CA, Project #0272, FIPS #075-00000) in the amount not to exceed
16 \$488,259 for Phase Two (construction) of the Project; and

17 WHEREAS, The total cost for construction in Phase Two is \$1,595,996; and

18 WHEREAS, The funds for the remainder of the Project Phase Two costs will be
19 available under Hetchy Capital Improvement Project No. CUH101 Hetchy Water-Power
20 Infrastructure; and

21 WHEREAS, On July 23, 2019, by SFPUC Resolution No. 19-0147, the Commission
22 authorized the SFPUC General Manager to request approval from the Board of Supervisors to
23 accept and expend Hazard Mitigation Grant funds from the Federal Emergency Management
24 Agency in the amount not to exceed \$488,259 for Phase Two of the Early Intake Slope
25 Stabilization project; now, therefore, be it

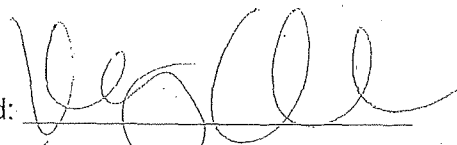
Mayor Breed
BOARD OF SUPERVISORS

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1 RESOLVED, That the Board of Supervisors authorizes the General Manager of the
2 SFPUC to accept and expend up to \$488,259 in Hazard Mitigation Grant funds from the
3 Federal Emergency Management Agency, through the California Governor's Office of
4 Emergency Services, for Phase Two of the Early Intake Slope Stabilization Project.
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1 Recommended:

Approved:



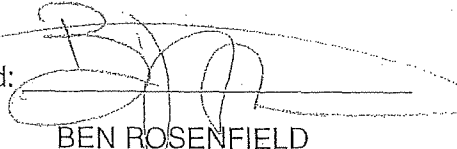
for LONDON N. BREED

Mayor

2
3 
4 HARLAN L. KELLY

5 General Manager, SFPUC

6 Approved:



BEN ROSENFELD

Controller

25 Mayor Breed

BOARD OF SUPERVISORS

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Item 3 File 19-1081	Department: Public Utilities Commission (PUC)
EXECUTIVE SUMMARY	
<p style="text-align: center;">Legislative Objectives</p> <ul style="list-style-type: none"> The proposed resolution would authorize the San Francisco Public Utilities Commission (SFPUC) General Manager to accept and expend a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant, passed through the California Governor's Office of Emergency Services, in an amount not to exceed \$488,259 for Phase Two of the Early Intake Switchyard Slope Stabilization Project, for the grant period of August 6, 2018 through April 30, 2020. <p style="text-align: center;">Key Points</p> <ul style="list-style-type: none"> The Early Intake Switchyard, located along the Tuolumne River in Groveland, transmits power generated at the Holm and Kirkwood Powerhouses to the Moccasin Powerhouse. The 2013 Rim Fire severely burned the slope adjacent to the Early Intake Switchyard, increasing the risk of slope hazards such as rock falls, landslides, debris/mud flows, and uncontrolled runoff, which could damage the switchyard and impact power transmission from two of the three powerhouses to San Francisco. In 2017, the Board of Supervisors approved the acceptance and expenditure of a FEMA grant of \$404,208 (with SFPUC providing \$190,133 in matching funds) for Phase One of the Early Intake Switchyard Slope Stabilization Project to reduce the risk of hazards threatening the Early Intake Switchyard. Phase One, which consisted of environmental studies, California Environmental Quality Act (CEQA) review, and engineering design, is now complete. In August 2018, FEMA awarded SFPUC \$488,259 in additional grant funding for Phase Two of the project. Phase Two, the project construction, began in September 2019 and is expected to be completed by February 2020. <p style="text-align: center;">Fiscal Impact</p> <ul style="list-style-type: none"> The grant authorized by the proposed resolution would provide SFPUC with \$488,259 in FEMA grant funding for Phase Two of the Early Intake Switchyard Slope Stabilization Project. Including a 10 percent contingency, the total project budget is \$1,755,596. SFPUC would contribute up to \$1,267,337 in matching funds, which is available in the Hetch Hetchy Power Enterprise capital budget. <p style="text-align: center;">Recommendation</p> <ul style="list-style-type: none"> Approve the proposed resolution. 	

MANDATE STATEMENT

City Administrative Code Section 10.170-1 states that accepting Federal, State, or third-party grant funds in the amount of \$100,000 or more, including any City matching funds required by the grant, is subject to Board of Supervisors approval.

BACKGROUND

The San Francisco Public Utilities Commission (SFPUC) owns and operates the Hetch Hetchy Power System, which delivers energy generated by three hydroelectric powerhouses in Tuolumne County to San Francisco along City-owned transmission lines. The Early Intake Switchyard, located along the Tuolumne River in Groveland, transmits power generated at the Holm and Kirkwood Powerhouses to the Moccasin Powerhouse.

The 2013 Rim Fire severely burned the slope adjacent to the Early Intake Switchyard, increasing the risk of slope hazards such as rock falls, landslides, debris/mud flows, and uncontrolled runoff, which could damage the switchyard and impact power transmission from two of the three powerhouses to San Francisco. In June 2014, SFPUC applied for a Hazard Mitigation Grant from the Federal Emergency Management Agency (FEMA) to help fund the Early Intake Slope Stabilization Project to reduce the risk of slope hazards threatening the Early Intake Switchyard.

The Early Intake Slope Stabilization Project is divided into two phases: (1) Pre-Award and Phase One for environmental studies, California Environmental Quality Act (CEQA) review, and engineering design; and (2) Phase Two for construction. Pre-Award and Phase One activities, funded by the initial FEMA grant and matching funds, are now complete.

FEMA awarded a grant of \$404,208, and in February 2017, the Board of Supervisors approved the acceptance and expenditure of the grant, with \$190,133 in SFPUC Hetch Hetchy Power Capital matching funds (File 17-0033, Resolution 055-17).

In August 2018, FEMA awarded SFPUC additional grant funding of \$488,259 for Phase Two of the project (subject of this report). In July 2019, the SFPUC Commission approved the acceptance and expenditure of the grant. According to Ms. Janet Ng, SFPUC Project Manager, approval did not come before the SFPUC Commission for approximately 11 months because of staffing changes and pending confirmation that construction would occur by receipt of proposals (bids) in June 2019.

In June 2019, SFPUC conducted a competitive bid to select a contractor for the Early Intake Slope Stabilization Project. SFPUC received two proposals, as shown in Table 1 below:

Table 1: Proposals from RFP Phase 2 of Early Intake Slope Stabilization Project

Proposer	Amount
Sierra Mountain Construction, Inc.	\$1,091,240
K.W. Emerson, Inc.	\$1,102,407

Source: SF Public Utilities Commission

Sierra Mountain Construction, Inc. was selected as the construction contractor and was awarded a contract.

DETAILS OF PROPOSED LEGISLATION

The proposed resolution would authorize the SFPUC General Manager to accept and expend a FEMA Hazard Mitigation Grant in an amount not to exceed \$488,259, for the grant period of August 6, 2018 through April 30, 2020. The total project budget, including a 10 percent contingency, is \$1,755,596. Grant funds would be disbursed through the California Governor's Office of Emergency Services, as a pass-through from FEMA.

According to Ms. Ng, SFPUC issued Notice to Proceed (NTP) for construction on September 9, 2019. Substantial Completion is anticipated by January 6, 2020, and Final Completion is anticipated by February 5, 2020.

FISCAL IMPACT

The proposed resolution would provide \$488,259 in FEMA grant funding for the Early Intake Slope Stabilization Project, with SFPUC contributing matching funds of up to \$1,267,337. Including a 10 percent contingency, the total project budget is \$1,755,596. According to Ms. Ng, there have been no contract change orders to date that would necessitate use of the contingency.

At the time when the grant was awarded, the total Phase 2 project budget was estimated at \$717,928, and SFPUC's contribution was \$229,669. According to Ms. Ng, the project budget has increased by \$1,037,668, or approximately 145 percent, to reflect the actual construction contract amount and actual budgets provided by support staff for services during construction and closeout. A more refined engineer's estimate from June 2019 estimated the construction bids to be approximately \$1,100,000 to \$1,250,000, which was consistent with the actual construction bids received. Since the project budget now exceeds the original estimate, SFPUC is responsible for covering all costs in excess of the FEMA grant.

The project budget is shown in Table 2 below:

Table 2: FEMA Hazard Mitigation Grant Budget

Sources	Amount		
FEMA Grant	\$488,259		
SFPUC Hetch Hetchy Power Enterprise Capital Funds	1,267,337		
Total Sources	\$1,755,596		

Uses	Contractor/ Consultant Costs	SFPUC Direct Labor Costs	Total Costs
Construction Contract	\$1,091,240	\$0	\$1,091,240
Project Management	8,332	59,282	67,614
Construction Management	57,520	218,883	276,403
Engineering Services During Construction	81,002	79,737	160,739
Subtotal	\$1,238,094	\$357,902	\$1,595,996
Contingency (10%)			159,600
Total Uses			\$1,755,596

Sufficient funding is available in the Hetch Hetchy Power Enterprise capital budget for SFPUC's share of the project.

RECOMMENDATION

Approve the proposed resolution.

File Number: _____
(Provided by Clerk of Board of Supervisors)

Grant Resolution Information Form
(Effective July 2011)

Purpose: Accompanies proposed Board of Supervisors resolutions authorizing a Department to accept and expend grant funds.

The following describes the grant referred to in the accompanying resolution:

1. Grant Title: **Hazard Mitigation Grant Program (HMGP)**
2. Department: **San Francisco Public Utilities Commission**
3. Contact Person: **Janet Ng** Telephone: **415-551-4614**
4. Grant Approval Status (check one):
☒ [X] Approved by funding agency ☐ [] Not yet approved
5. Amount of Grant Funding Approved or Applied for: **\$488,259**
6. a. Matching Funds Required: **\$229,669**
b. Source(s) of matching funds (if applicable): **Hetchy Capital Improvement Projects (CUH101)**
7. a. Grant Source Agency: **Federal Emergency Management Agency (FEMA)**
b. Grant Pass-Through Agency (if applicable): **California Governor's Office of Emergency Services (Cal OES)**
8. Proposed Grant Project Summary:

SFPUC Resolution No. 19-0147 authorizes the General Manager of the SFPUC to request approval from the Board of Supervisors to accept and expend Hazard Mitigation Grant funds from the California Governor's Office of Emergency Services in an amount not to exceed \$488,259.

Background

Since the 2013 Rim Fire was declared a major federal disaster, the State of California is eligible for Hazard Mitigation Grant Program (HMGP) funding for hazard mitigation activities which are aimed at reducing or eliminating future damage to facilities.

On behalf of the City and County of San Francisco, the SFPUC submitted, through the California Governor's Office of Emergency Services (Cal OES), a sub-application (FEMA-4158-DR-CA, Project #0272, FIPS #075-00000) in June 2014 to the HMGP for the Early Intake Switchyard Slope Stabilization Project (the Project). The slope of concern is adjacent to and above the Early Intake Switchyard and it was severely burned and denuded in the Rim Fire. The purpose of the Project is to reduce the risk of slope failure which may cause damage to the switchyard and loss of power transmission capability to the City.

The SFPUC received notification dated June 30, 2016 from Cal OES that FEMA approved the sub-application for Pre-Award and Phase One of the Project to complete the pre-construction activities including professional services support for HMGP sub-application, engineering design and environmental studies. The total cost estimate for Pre-Award and Phase One is \$594,341

and the approved Federal share is \$404,208. On February 28, 2017, the Board of Supervisors authorized the General Manager of the SFPUC to accept and expend the grant amount of \$404,208 through Resolution 55-17. Payment of the Federal share has been obtained through the reimbursement process.

Pre-Award and Phase One activities have been completed. On August 6, 2018, FEMA approved Phase Two of the Project for construction. The total cost estimate for Phase Two is \$717,928 and the approved Federal share is \$488,259. Payment of the Federal share will be obtained through the reimbursement process.

9. Grant Project Schedule, as allowed in approval documents, or as proposed:

On December 13, 2018, FEMA informed Cal OES that the Period of Performance to complete the Project would end on December 13, 2019. On May 24, 2019, the construction bid package was advertised and bids were received on June 20, 2019. Notice to Proceed (NTP) for construction is anticipated to be issued in the fall of 2019 with construction completed in the winter of 2019. Although the Period of Performance to complete the Project will end on December 13, 2019 as indicated in FEMA's December 13, 2018 letter to Cal OES, FEMA's Region IX Mitigation Division (serving California) has requested an extension of the Period of Performance to December 13, 2020, which is pending.

Start-Date: August 2018

End-Date: March 2020

- 10.a. Amount budgeted for contractual services: **\$717,928 for Construction Contract**
b. Will contractual services be put out to bid? **Yes, Construction Contract was bid**
c. If so, will contract services help to further the goals of the Department's Local Business Enterprise (LBE) requirements? **No, the Federal HMGP that the City is receiving partial funding from does not allow LBE subcontractor participation requirements.**
d. Is this likely to be a one-time or ongoing request for contracting out? **One time for construction contract**
11. a. Does the budget include indirect costs?
[] Yes [X] No
b. 1. If yes, how much? \$
b. 2. How was the amount calculated?
c. 1. If no, why are indirect costs not included?
[] Not allowed by granting agency [X] To maximize use of grant funds on direct services
[] Other (please explain):
c. 2. If no indirect costs are included, what would have been the indirect costs?
The indirect costs including Engineering Services during Construction and Construction Management are estimated to be approximately \$437,142.

12. Any other significant grant requirements or comments:

****Disability Access Checklist** (Department must forward a copy of all completed Grant Information Forms to the Mayor's Office of Disability)**

13. This Grant is intended for activities at (check all that apply):

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Existing Site(s) | <input type="checkbox"/> Existing Structure(s) | <input type="checkbox"/> Existing Program(s) or Service(s) |
| <input type="checkbox"/> Rehabilitated Site(s) | <input type="checkbox"/> Rehabilitated Structure(s) | <input type="checkbox"/> New Program(s) or Service(s) |
| <input type="checkbox"/> New Site(s) | <input type="checkbox"/> New Structure(s) | |

14. The Departmental ADA Coordinator or the Mayor's Office on Disability have reviewed the proposal and concluded that the project as proposed will be in compliance with the Americans with Disabilities Act and all other Federal, State and local disability rights laws and regulations and will allow the full inclusion of persons with disabilities. These requirements include, but are not limited to:

1. Having staff trained in how to provide reasonable modifications in policies, practices and procedures;
2. Having auxiliary aids and services available in a timely manner in order to ensure communication access;
3. Ensuring that any service areas and related facilities open to the public are architecturally accessible and have been inspected and approved by the DPW Access Compliance Officer or the Mayor's Office on Disability Compliance Officers.

If such access would be technically infeasible, this is described in the comments section below:

Comments: *Per 14.3 above, this project should be routed through the appropriate ADA Compliance Officer for Public Right of Way Accessibility Review. Please contact Mayor's Office on Disability with questions.*

Departmental ADA Coordinator or Mayor's Office of Disability Reviewer:

X Nicole Bohn
(Name)

Director, Mayor's Office on Disability
(Title)

Date Reviewed: *Sept 16, 2019*

[Signature]
(Signature Required)

Department Head or Designee Approval of Grant Information Form:

Harlan L. Kelly, Jr.
(Name)

General Manager, San Francisco Public Utilities Commission
(Title)

Date Reviewed: *9/23/19*

[Signature]
(Signature Required)



FEMA

August 6, 2018

Charles Rabamad
Governor's Authorized Representative
California Governor's Office of Emergency Services
3650 Schriever Ave.
Mather, California 95655

Reference: Phase 2 Approval, HMGP #4158-272-2R
City and County of San Francisco
Early Intake Switchyard Slope Stabilization Project
Supplement #21

Dear Mr. Rabamad:

We have approved Phase Two funding for the above-referenced Hazard Mitigation Grant Program (HMGP) subapplication from the City and County of San Francisco Early Intake Switchyard Slope Stabilization Project (Subrecipient).

In our Phase One letter, dated June 6, 2016, we approved a total estimated cost of \$594,341 and obligated a 68 percent federal share of \$404,208 for the Subrecipient to provide a preliminary engineering design and environmental study report necessary to continue our determination of HMGP programmatic eligibility, including compliance with the National Environmental Policy Act (NEPA).

Upon receipt of the Phase One information, we completed our reviews, and determined the project is eligible for Phase Two construction funding. As shown in the enclosed Supplement #21 Obligation Report, we deducted the Phase One costs, and approve \$717,928 total eligible cost; the 68 percent federal share reimbursement is \$488,259. These funds are now available in Smartlink. The following chart summarizes the approved funding for this project:

	<u>68% Federal Share</u>	<u>32% Match</u>	<u>Total Cost</u>
Phase One, Supplement #12	\$404,208	\$190,133	\$594,341
Phase Two, Supplement #21	\$488,259	\$229,669	\$717,928
Estimated Total Project Cost	\$892,467	\$419,802	\$1,312,269

This determination is based on:

1. **Scope of Work (SOW)** – The SOW activity is to protect the face of the slope with a shotcrete facing to discourage on-going raveling which may include rounding of an overhanging rim of soil and other vegetation for a few feet at the upslope perimeter of the scarp to seal the wall to the face and ensure proper drainage. Construct a combination of rock scaling and rock netting to minimize the rockfall hazards. Installing a concrete box and headwall near the toe of the east and west concentrated runoffs and re-route the runoff to the existing 24-inch culverts through a circular storm drain.
2. **National Environmental Policy Act (NEPA)** - FEMA authorized a Programmatic Environmental Assessment (EA) and our Environmental Officer issued an EA in compliance with the National Environmental Policy Act. A Record of Environmental Consideration (REC) document is enclosed for additional information and for your records.

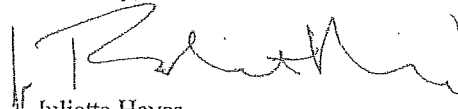
3. **Project Activity Completion and Grant Period of Performance (POP)** – According to the subapplication, the project activity will be completed in 24 months after approval or August 6, 2020. However, we are unable to annotate this date since all projects are to be completed by the grant POP termination date which we previously extended to December 13, 2018. A second POP extension, limited to 12 months, requires review by Headquarters. We will recommend a POP to Headquarters with a July 10, 2020, completion date, and inform you of their decision.

Please advise the Subrecipient that FEMA may de-obligate Federal funds for any work not completed within schedule, and for which no time extension is approved. In accordance with 44 CFR 13.23, the Recipient must liquidate all obligations incurred under the award no later than 90 days after the end of the completion date.

4. **Phase One Underrun** - Any underrun from the Phase One funding shall be applied to the Phase Two construction or de-obligated.
5. **Benefit-Cost Analysis (BCA)** - The project SOW is cost effective since it is supported by a BCA with a benefit-cost ratio greater than one.
6. This award of funds is subject to the *2015 HMA Guidance*, the *January 2017 State HMGP Administrative Plan*, and enclosed *Standard HMGP Conditions*. Federal funds may be de-obligated for work that does not comply with these conditions.

If you have any questions or need further assistance, please contact Aaron Lim, Hazard Mitigation Assistance Specialist, at aaron.lim@fema.dhs.gov or at (510) 627-7036.

Sincerely,


Juliette Hayes
Director
Mitigation Division
FEMA Region IX

Enclosures (4):

Supplement #21 Obligation Report
Project Management Report
Record of Environmental Consideration (REC)
Standard HMGP Conditions

cc: Robin Shepard, Cal OES

08/06/2018
13:05

FEDERAL EMERGENCY MANAGEMENT AGENCY
HAZARD MITIGATION GRANTS PROGRAM
Obligation Report w/ Signatures

HMGP-OB-02

Disaster No	FEMA Project No	Amendment No	State Application ID	Action No	Supplemental No	State	Recipient
4158	2-R	1	272	2	21	CA	Statewide

Sub-Recipient: SAN FRANCISCO PUBLIC UTILITIES COMMISS Project Title : City and County of San Francisco Early Intake Switchyard Slope Stabilization
Sub-Recipient FIPS Code: 075-UBYA4

Total Amount Previously Allocated	Total Amount Previously Obligated	Total Amount Pending Obligation	Total Amount Available for New Obligation
\$892,467	\$892,467	\$0	\$0

Project Amount	Recipient Admin Est	Sub-Recipient Admin Est	Total Obligation	IFMIS Date	IFMIS Status	FY
\$488,259	\$0	\$0	\$488,259	07/12/2018	Accept	2018

Comments

Date: 07/12/2018 User Id: KMOJICA

Comment: Approved Early Intake Switchyard Slope Stabilization Project

Authorization

Preparer Name: KAREN MOJICA

Preparation Date: 07/12/2018

HMO Authorization Name: AARON LIM

HMO Authorization Date: 07/12/2018



Authorizing Official Signature



Authorizing Official Title



Authorization Date

Authorizing Official Signature

Authorizing Official Title

Authorization Date

08/06/2018
9:17 AM

FEDERAL EMERGENCY MANAGEMENT AGENCY
HAZARD MITIGATION GRANT PROGRAM

HMGP-AP-01

Project Management Report

Disaster Number	FEMA Project Number	Amendment Number	App ID	State	Recipient
4158	2-R	1	272	CA	Statewide

Sub-Recipient: SAN FRANCISCO PUBLIC UTILITIES COM

FIPS Code: 075-UBYA4

Project Title : City and County of San Francisco Early Intake Switchyard Slope Stabilization

Mitigation Project Description

Amendment Status : Approved

Approval Status: Approved

Project Title : City and County of San Francisco Early Intake Switchyard Slope Stabilization

Recipient : Statewide

Sub-Recipient : SAN FRANCISCO PUBLIC UTILITIE

Recipient County Name : San Francisco

Sub-Recipient County Name : San Francisco

Recipient County Code : 75

Sub-Recipient County Code : 75

Recipient Place Name : San Francisco

Sub-Recipient Place Name : San Francisco

Recipient Place Code : 0

Sub-Recipient Place Code : 67000

Project Closeout Date : 00/00/0000

Work Schedule Status

Amend #	Description	Time Frame	Due Date	Revised Date	Completion Date
0	Design	10 mos	00/00/0000	00/00/0000	00/00/0000
1	Design	10 mos	00/00/0000	00/00/0000	00/00/0000
1	Bid and Award	3 mos	00/00/0000	00/00/0000	00/00/0000
0	Bid and Award	3 mos	00/00/0000	00/00/0000	00/00/0000
0	Mobilization/Office Engineering	4 mos	00/00/0000	00/00/0000	00/00/0000
1	Mobilization/Office Engineering	4 mos	00/00/0000	00/00/0000	00/00/0000
0	On-site construction	3 mos	00/00/0000	00/00/0000	00/00/0000
1	On-site construction	3 mos	00/00/0000	00/00/0000	00/00/0000
1	Demobilization	1 mo	00/00/0000	00/00/0000	00/00/0000
0	Demobilization	1 mo	00/00/0000	00/00/0000	00/00/0000
1	As-built Drawings	1 mo	00/00/0000	00/00/0000	00/00/0000
0	As-built Drawings	1 mo	00/00/0000	00/00/0000	00/00/0000
1	Contract closeout	2 mos	00/00/0000	00/00/0000	00/00/0000
0	Contract closeout	2 mos	00/00/0000	00/00/0000	00/00/0000

Approved Amounts

Total Approved Net Eligible	Federal Share Percent	Total Approved Federal Share Amount	Non-Federal Share Percent	Total Approved Non-Fed Share Amount
\$1,312,269	68.009440000	\$892,467	31.990560000	\$419,802

Allocations

Allocation Number	IFMIS Status	IFMIS Date	Submission Date	FY	ES Support Req ID	ES Amend Number	Proj Alloc Amount Fed Share	Recipient Admin Amount	Sub-Recipient Admin Amount	Total Alloc Amount
13	A	06/04/2016	06/03/2016	2016	2548515	4	\$404,208	\$0	\$0	\$404,208
22	A	07/11/2018	07/10/2018	2018	2711125	5	\$488,259	\$0	\$0	\$488,259
Total							\$892,467	\$0	\$0	\$892,467

08/06/2018

FEDERAL EMERGENCY MANAGEMENT AGENCY

HMGP-AP-01

9:17 AM

HAZARD MITIGATION GRANT PROGRAM

Project Management Report

Disaster Number	FEMA Project Number	Amendment Number	App ID	State	Recipient
4158	2-R	1	272	CA	Statewide

Sub-Recipient: SAN FRANCISCO PUBLIC UTILITIES COM

FIPS Code: 075-UBYA4

Project Title : City and County of San Francisco Early Intake Switchyard Slope Stabilizatio

Obligations

Action Nr	IFMIS Status	IFMIS Date	Submission Date	FY	ES Support Req ID	ES Amend Number	Suppl Nr	Project Obligated Amt - Fed Share	Recipient Admin	Sub-Recipient Admin Amount	Total Obligated Amount
1	A	06/06/2016	06/06/2016	2016	2584966	12	12	\$404,208	\$0	\$0	\$404,208
2	A	07/12/2018	07/12/2018	2018	2768046	21	21	\$488,259	\$0	\$0	\$488,259
Total								\$892,467	\$0	\$0	\$892,467

06/04/2018

FEDERAL EMERGENCY MANAGEMENT AGENCY

REC-01

15:14:18

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project ID: HMGP 4158-272-002

Title: Early Intake Switchyard Slope Stabilization Project

NEPA DETERMINATION

Non Compliant Flag: No EA Draft Date: 10/21/2014 EA Final Date: 12/10/2014
 EA Public Notice Date: 10/21/2014 EA Fonsl Date: 12/10/2014 Level: EA
 EIS Notice of Intent Date: EIS ROD Date:

Comments: The FEMA 2014 PEA for Recurring Actions in Arizona, California, and Nevada and the corresponding FONSI, signed on December 10, 2014, sufficiently addresses the environmental consequences of the proposed action. As the proposed action would not result in substantial impacts to the environment beyond those described in the PEA, no additional NEPA-specific public noticing or documentation is required, as stated under Section 1.8.2 of the 2014 PEA. - dcohen3 - 06/01/2018 22:59:14 GMT
 Project would include rock fall protections and drainage improvements adjacent to Intake Switchyard to ensure the long-term protection of this existing power facility. Project objectives are 1) protect the access road and equipment at the Switchyard from rock falls, and 2) prevent flooding of the Switchyard facility. The three Project components include: 1) installing steel wire netting across the face of the road cut, 2) removing isolated hazardous rocks and installing wire mesh netting over hazardous boulder fields on the hillside above the Switchyard, and 3) improving surface drainage measures along the access road. - dcohen3 - 06/01/2018 23:00:05 GMT

EXTRAORDINARY CIRCUMSTANCES

Extraordinary Circumstance Code	Description	Selected ?
	No Extraordinary Circumstances were selected	

ENVIRONMENTAL LAW / EXECUTIVE ORDER

Environmental Law/ Executive Order	Status	Description	Comments
Clean Air Act (CAA)	Completed	Project will not result in permanent air emissions - Review concluded	
Coastal Barrier Resources Act (CBRA)	Completed	Project is not on or connected to CBRA Unit or otherwise protected area - Review concluded	
Clean Water Act (CWA)	Completed	Project would not affect any water of the U.S. - Review concluded	
Coastal Zone Management Act (CZMA)	Completed	Project is not located in a coastal zone area and does not affect a coastal zone area - Review concluded	
Executive Order 11988 - Floodplains	Completed	No effect on floodplain/flood levels and project outside floodplain - Review concluded	The project location is shown on FIRM 06109C1275C, Effective Date: 4/15/2009, and lies within Zone D. - dcohen3 - 06/01/2018 16:41:41 GMT
Executive Order 11990 - Wetlands	Completed	No effects on wetlands and project outside wetlands - Review concluded	An aquatic resources delineation was conducted by the subrecipient's consultant (Nomad) to identify wetlands and waters in the Project area. Nomad conducted a routine aquatic resources assessment in March and June 2017, and additional survey data was collected between March and July 2017.

NOTE: All times are GMT using a 24-hour clock.

Page 1 of 4

06/04/2018

FEDERAL EMERGENCY MANAGEMENT AGENCY

REC-01

15:14:19

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project ID: HMGP 4158-272-002

Title: Early Intake Switchyard Slope Stabilization Project

Environmental Law/ Executive Order	Status	Description	Comments
			Three stream features were found to be present onsite, including one intermittent stream and two ephemeral streams. One wetland seep was also present in the study area. The Project would avoid all aquatic features. No jurisdictional wetlands or WOUS will be impacted. - dcohen3 - 06/01/2018 20:30:52 GMT
Executive Order 12898 - Environmental Justice for Low Income and Minority Populations	Completed	No Low income or minority population in, near or affected by the project - Review concluded	Project location is in an unpopulated area surrounded by the Stanislaus National Forest, and protection of operations at the power facility would have a beneficial affect on any low income or minority populations in San Francisco served by the facility. - dcohen3 - 06/01/2018 20:33:47 GMT
Endangered Species Act (ESA)	Completed	Listed species and/or designated critical habitat present in areas affected directly or indirectly by the federal action	Based on the lack of suitable habitat for any federally listed species in the Action Area and the lack of Critical Habitat and EFH in the Action Area, the proposed project would have "no effect" on any species or critical habitat protected under the ESA. Therefore, consultation with USFWS and NMFS under Section 7 of the ESA is not required. Any changes to the scope of work must be resubmitted to FEMA for ESA compliance. See attached No Effect Determination. - dcohen3 - 06/01/2018 22:50:27 GMT
	Completed	No effect to species or designated critical habitat (See comments for justification) - Review concluded	
Farmland Protection Policy Act (FPPA)	Completed	Project does not affect designated prime or unique farmland - Review concluded	
Fish and Wildlife Coordination Act (FWCA)	Completed	Project does not affect, control, or modify a waterway/body of water - Review concluded	
Migratory Bird Treaty Act (MBTA)	Completed	Project located within a flyway zone	The project would occur in areas that could contain migratory birds. SFPUC is responsible for compliance with the MBTA. In the event migratory birds stop in the project areas, construction activities could temporarily discourage these birds from using the areas in the vicinity of the construction sites due to temporary ground and vegetation disturbance, human presence, and increased noise levels. - dcohen3 - 06/01/2018 20:43:26 GMT The Project incorporates management requirements (e.g., nest buffers) to ensure noise and human activity associated with the Project would not have an adverse effect on any nesting birds. SFPUC Standard Construction Measure Number 7, if construction activity begins during the breeding season (March 1 to August 30), a

NOTE: All times are GMT using a 24-hour clock.

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06/04/2018

FEDERAL EMERGENCY MANAGEMENT AGENCY

REC-01

15:14:19

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project ID: HMGP 4158-272-002

Title: Early Intake Switchyard Slope Stabilization Project

Environmental Law/ Executive Order	Status	Description	Comments
			preconstruction survey for nests and nesting birds shall be conducted to ensure active migratory bird nests (containing eggs or chicks), if present, are not destroyed. - dcohen3 - 06/01/2018 22:28:56 GMT
	Completed	Project does not have potential to take migratory birds - Review concluded	
Magnuson-Stevens Fishery Conservation and Management Act (MSA)	Completed	Project not located in or near Essential Fish Habitat - Review concluded	
National Historic Preservation Act (NHPA)	Completed	Standard Section 106 review	CA SHPO, in a letter dated 3/13/18, concurred with FEMA's determination of No Adverse Effect. Concurrence letter is attached. - sortega3 - 04/04/2018 17:07:55 GMT
	Completed	Building or structure 50 years or older or listed on the National Register in the project area and activity not exempt from review	
	Completed	Determination of Historic Properties Affected (FEMA finding/SHPO/THPO concurrence attached)	
	Completed	No Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence attached) - Review concluded	
	Completed	Project affects undisturbed ground	
	Completed	Project area has potential for presence of archeological resources	
	Completed	Determination of historic properties affected	
	Completed	NR eligible resources present in project area. (FEMA finding/ SHPO/THPO concurrence attached)	
	Completed	No Adverse Effect Determination, (FEMA finding/ SHPO/THPO concurrence attached) - Review concluded	
Wild and Scenic Rivers Act (WSR)	Completed	Project is not along and does not affect Wild and Scenic River - Review concluded	The project location is near the Tuolumne River in an existing developed power facility. All project actions would occur within the developed and modified area not directly adjacent to the river bank, USFS has not raised any concerns about the proposed

NOTE: All times are GMT using a 24-hour clock.

Page 3 of 4

06/04/2018

FEDERAL EMERGENCY MANAGEMENT AGENCY

REC-01

15:14:19

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project ID: HMGP 4158-272-002

Title: Early Intake Switchyard Slope Stabilization Project

Environmental Law/
Executive Order

Status

Description

Comments

actions. - dcohen3 - 06/01/2018 22:45:42 GMT

CONDITIONS

Special Conditions required on implementation of Projects:

In March 13, 2018 No Adverse Affect concurrence letter (see attached) SHPO advises, "...under certain circumstances, such as unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800".

Source of condition: National Historic Preservation Act (NHPA)

Monitoring Required: No

Source of condition: National Historic Preservation Act (NHPA)

Monitoring Required: No

Standard Conditions:

Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.

This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.

If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.

Standard Hazard Mitigation Grant Program (HMGP) Conditions
Prepared by FEMA Region IX, Updated February, 2005

The following standard requirements apply to grantees and subgrantees accepting funds from the Federal Emergency Management Agency (FEMA) HMGP:

1. **Applicable Federal, State and Local Laws and Regulations.** The grantee and subgrantee must comply with all applicable Federal, State and Local laws and regulations, regardless of whether they are specifically identified in this list or other project documents.
2. **Standards for Financial Management Systems.** Grantees and subgrantees must maintain financial management systems to account for and track grant funds, in compliance with the Code of Federal Regulations, Title 44 (44 CFR) Section 13.20.
3. **Allowable Costs.** Grant funds may only be used for allowable costs, in compliance with 44 CFR Section 13.22, and in compliance with the approved grant project scope of work and any agreements among the subgrantee, the grantee, and FEMA.
4. **Subgrantee Indirect Costs.** No indirect costs of a subgrantee are separately eligible for HMGP reimbursement, in compliance with 44 CFR Section 206.439(c)(2). Such costs are covered by the Subgrantee Administrative Cost allowance formula provided by 44 CFR Section 206.439(b)(1)(ii).
5. **Matching or Cost Sharing.** Non-federal matching or cost sharing must be in accordance with 44 CFR Section 13.24, the approved grant project scope of work, and any agreements among the subgrantee, the grantee, and FEMA.
6. **Non-Federal Audit.** The grantee and subgrantee are responsible for obtaining audits in accordance with the Single Audit Act of 1984, in compliance with 44 CFR Section 13.26.
7. **NEPA Reviews for Scope of Work Amendments.** To comply with the National Environmental Policy Act (NEPA), additions or amendments to a HMGP subgrantee statement of work (SOW) shall be reviewed by all state and federal agencies participating in the NEPA process. NEPA compliance for all SOW additions or amendments is essential before the revised SOW can be approved by FEMA or implemented by the HMGP subgrantee. Any construction activities associated with a SOW change, prior to FEMA approval, may be ineligible for reimbursement or match.
8. **Cost Overruns.** Subgrantees should be referred to the state HMGP administrative plan for project cost overrun regulations. If project costs exceed the approved federal share, the subgrantee must contact the Governor's Authorized Representative. The GAR will evaluate requests for cost overruns. Written determination of cost overrun eligibility in accordance with 44 CFR 206.438(b) shall be submitted by the GAR to the FEMA Regional Director.
9. **Real Property (Land).** If real property (land) is acquired under an HMGP grant, the use and disposition of the property shall be in compliance with 44 CFR Section 13.31 and Section 206.434(d).
10. **Equipment.** If equipment is acquired under an HMGP grant, the use and disposition of the equipment shall be in compliance with 44 CFR Section 13.32.

11. **Supplies.** If there is a residual inventory of unused supplies exceeding \$5,000 in total fair market value upon completion of the HMGP grant, and if the supplies are not needed for any other federally sponsored programs or projects, the grantee or subgrantee shall compensate the awarding agency for its share (44 CFR Section 13.33).
12. **Copyrights.** In accord with 44 CFR Section 13.34, FEMA reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for Federal Government purposes:
 - (a) The copyright in any work developed under a grant, subgrant, or contract under a grant or subgrant; and
 - (b) Any rights of copyright to which a grantee, subgrantee or a contractor purchases ownership with grant support.
13. **Subawards to debarred and suspended parties.** In accordance with 44 CFR Section 13.35, the grantee and subgrantees must not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549, "Debarment and Suspension."
14. **Procurement.** Procurement procedures shall be in conformance with 44 CFR Section 13.36.
15. **Monitoring and Reporting Program Performance.** The grantee and subgrantees must submit quarterly progress reports, in accord with 44 CFR Section 13.40 and the State HMGP Administrative Plan.
16. **Retention and Access Requirements for Records.** In accordance with 44 CFR Section 13.42, financial and programmatic records related to expenditure of funds on grant-supported projects shall be maintained at least 3 years following the date the grantee submits its final expenditure report on the project.
17. **Enforcement.** If a grantee or subgrantee materially fails to comply with any term of an award, whether stated in a Federal statute or regulation, an assurance, in a State plan or application, a notice of award, or elsewhere, FEMA may take one or more of the actions outlined in 44 CFR Section 13.43; including termination of the grant.
18. **Termination for Convenience.** Grant awards may be terminated for convenience through the procedures outlined in 44 CFR Section 13.44.
19. **Discovery of Historic Properties and Cultural Resources.** In accordance with 36 CFR Part 800, in the event a potential historic property or cultural resource is discovered during construction activities, the subgrantee must cease work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the discovered property/resource. Construction activities in the area of the discovery shall not resume until FEMA concludes consultation with the State Historic Preservation Officer (SHPO) for treatment of the discovery.
20. **Equipment Rates.** Rates claimed for use of applicant-owned equipment that are in excess of the FEMA-approved rates must be approved under State guidelines issued by the State Comptroller's Office or must be certified by the State to include only those costs attributable to equipment usage less any fixed overhead and/or profit."
21. **Duplication of Funding between PA and HMGP.** It is permissible to use PA and 404 HMGP funds on the same facility/location, but the scopes of work identified under each program must be distinct and the funds accounted for separately. At the time of closeout, FEMA will adjust the funding if necessary to ensure that the subgrantee has been reimbursed for eligible scope from only one funding source.

EDMUND G. BROWN JR.
GOVERNOR



Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

MARK S. GRILLARDI
DIRECTOR

June 30, 2016

Jimmy Leong
Principal Engineer
San Francisco, City and County
525 Golden Gate Avenue
San Francisco, CA 94102

**Subject: Notification of Subapplication Approval
Hazard Mitigation Grant Program
FEMA-4158-DR-CA, Project #0272, FIPS #075-00000**

Dear Mr. Leong:

The California Governor's Office of Emergency Services (Cal OES) received notification that the Federal Emergency Management Agency (FEMA) has fully approved your organization's Subaward application in the amount of \$404,208.00. A copy of the FEMA award package is enclosed for your records.

In order to receive payment, all subrecipient must have a current (within the last 3 years), valid Governing Body Resolution and updated Grant Assurances on file with our office (sample copies enclosed). These forms may be downloaded in an electronic format at www.caloes.ca.gov following the links: *Cal OES Divisions; Recovery; Disaster Mitigation & Technical Support; 404 Hazard Mitigation Grant Program; HM Post Obligation Documents*. Please complete the electronic forms and the enclosed "Supplemental Grant Subaward Information" sheet and return them to the address below within 30 Days. Payments will be made on a reimbursement basis using the Hazard Mitigation Reimbursement Form. A ten percent (10%) retention will be withheld from all reimbursement payments and will be released as part of the subgrant closeout process.

Reimbursements can be made for only items listed on the approved subaward application; expenditures for any other work should be separately maintained and are the sole responsibility of the subrecipient. Any funds received in excess of current needs or approved amounts, or those found owed as a result of a final inspection or audit must be refunded to the State within 30 days of receipt of an invoice from Cal OES.

Please read all enclosed documents prior to initiating the approved project. For further assistance please contact the Hazard Mitigation Grants at (916) 845-8150.

Grants Processing Unit

Enclosures

c: Applicant's File

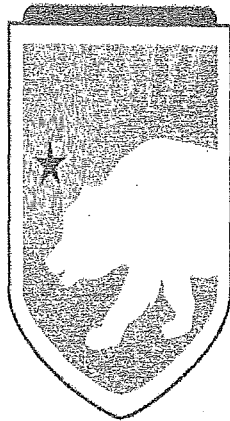
3650 SCHRIEVER AVENUE • MATHER, CA 95655
GRANTS PROCESSING UNIT
(916) 845-8150 • (916) 636-3880 FAX

2732

4032

Hazard Mitigation Grant Program

PROJECT SUB-APPLICATION



Cal OES

GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

PART I- ACTIVITY INFORMATION

THIS PAGE FOR STATE USE ONLY

STATE PROJECT APPLICATION FORM

DR NO.: 4158

STATE: CA

PROJECT NO.: TBD

=====

SECTION I – STATE INFORMATION

STATE APPLICANT INFORMATION

APPLICANT: > California Governor's Office of Emergency Services

FIPS CODE: > 000-92250

CONTACT: NAME: > TBD

TITLE: > TBD

ORGANIZATION: > Hazard Mitigation Grants Division

ADDRESS: > 3650 Schriever Avenue

CITY: > Mather

STATE: > CA ZIP CODE: > 95655

LONGITUDE: > -121.30505W

LATITUDE: > 38.57100N

TELEPHONE: > 916-845-8150 FAX NO: > 916-636-3780

PROJECT CONFORMS TO ITEM > #

In the State's Multihazard Mitigation Plan (if necessary also list which annex of the plan in the shaded text box.)

According to the State's Multihazard Mitigation Plan, Project is priority > # .

STATE LEGISLATIVE DISTRICT: > ALL

THIS FOR SUB-APPLICANT

SECTION II – SUB-APPLICANT INFORMATION

SUB-APPLICANT INFORMATION

1. SUB-APPLICANT: >City and County of San Francisco
2. FIPS #: >000-UDE6N-00
3. DUNS #: >070384255
4. COUNTY: >Tuolumne County - location of project site
5. TYPE: GOVERNMENT ☒ SPECIAL DISTRICT ☐ PRIVATE NON-PROFIT ☐
6. POLITICAL DISTRICT(S): CONGRESSIONAL 4th, 12th & 14th
STATE ASSEMBLY 5th, 17th & 19th
STATE LEGISLATIVE 8th, 11th & 14th
7. CONTACT: NAME: Mr. / Ms. >Mr. First>Jimmy Last>Leong
TITLE: >Principal Engineer
ORGANIZATION: >San Francisco Public Utilities Commission
ADDRESS: >P.O. Box 160
CITY: >Moccasin
STATE: >CA ZIP CODE: >95347
TELEPHONE: >209-989-2040
E-MAIL ADDRESS: >jleong@sfgwater.org
8. NFIP PARTICIPATION ☒ YES ☐ NO LAST CAV DATE: N/A; project is not in 100-year floodplain
Tuolumne County participates in the NFIP; however, this project is not located within the 100-year floodplain – refer to Attachment 4.

9. ALTERNATE CONTACT:

NAME: Mr. / Ms. > Ms. First > Cheryl Last > Taylor
TITLE: > Principal Administrative Analyst II
ORGANIZATION: > San Francisco Public Utilities Commission
ADDRESS: > 525 Golden Gate Avenue, 4th Floor
CITY: > San Francisco
STATE: > CA
ZIP CODE: > 94102
TELEPHONE: > 415-487-5282
E-MAIL ADDRESS: > ctaylor@sfgwater.org

10. LOCAL HAZARD MITIGATION PLAN (LHMP) requirement: a FEMA approved and local agency adopted Multihazard mitigation plan is required at the time of the disaster declaration and at time of award:

These plans are also referenced as "LHMP" or Local Hazard Mitigation Plan:

LHMP's are either Single Jurisdictional or Multi-Jurisdictional

LOCAL MULTI-JURISDICTIONAL MULTHAZARD PLAN:

2008 City and County of San Francisco Hazard Mitigation Plan

DATE APPROVED BY FEMA: January 9, 2009

DATE ADOPTED BY LOCAL AGENCY: December 9, 2008

OR

LOCAL SINGLE JURISDICTIONAL MULTHAZARD MITIGATION PLAN:

SUBMITTED: ☐ APPROVED: ☐

DATE APPROVED BY FEMA: ☐

DATE ADOPTED BY LOCAL AGENCY: ☐

Lead Agency: SF Department of Emergency Management

Name/Title of your PLAN: 2008 City and County of San Francisco Hazard Mitigation Plan

State where in the approved Plan your proposed project is in conformance with the Plan.

CHAPTER: **

PAGE: **

SECTION: **

** The 2008 SF Hazard Mitigation Plan did not address the vulnerability of City-owned assets located outside of the County limits, such as Hetch Hetchy Water & Power facility assets.

SECTION III – PROJECT INFORMATION

11. PROJECT TITLE: > Early Intake Switchyard Slope Stabilization Project

12. PROJECT LOCATION:

Detailed location (include the legal description, latitude and longitude coordinates):
Refer to Instructions Section III, #12 on page #5 for detailed requirements.

The ISY Slope Stabilization Project site is located in Tuolumne County, adjacent to the Intake Switchyard as short distance west of Cherry Lake Road, just south of the Cherry Lake Road bridge crossing of the Tuolumne River. Site location: latitude / longitude coordinates: 37.87477° N / 119.96601° W; T 1S; R 18E; NW¼ of NW¼ of Sec 11.

Legal description: Amended Location of Electric Transmission Lines, Early Intake to Moccasin through T 1. N. R. 18 E., T. 1 S. R 15, R 16, R 17, & R 18 E. M.D.B. & M. Tuolumne County, California shown on drawing R-525 rev. 1, filed and approved with the United States Lands Office in Sacramento, California, Serial Number 017065, on December 6, 1957 under the Raker Act of December 19, 1913 (38 Stats. 242).

13. MAPPING REQUIREMENTS:

Attach or enclose maps (USGS, City plat maps, aerial photos) photographs and diagrams that clearly depict the exact project location. Maps should be oriented with a north arrow. Refer to Instructions Section III, #13, on page #6.

Maps and photographs showing the project location and site boundaries are included in Attachment 1.

14. DEED RESTRICTIONS THAT LIMIT FEDERAL FUNDING:

There are no restrictions that would preclude federal funding assistance.

15. PUBLIC ASSISTANCE PROGRAM FUNDING:

FEMA-4158-DR-CA Rim Fire; requested \$505,914. No project worksheet(s) related to this project have been completed to date.

16. PROJECT DESCRIPTION: REQUIRED

A. PROJECT TYPE: Double Click the selected box. At least one must be selected.

EQ-Structural ☐

EQ-Non-structural ☐

EQ Structural & Non-Structural ☐

Flood-Elevation ☐

Flood-Acquisition ☐

Flood-Control ☒

Fire-Vegetation Management ☐

Fire-Resistant Bldg. Materials ☐

Fire-Defensible Space ☐

B. Describe the problem you are attempting to solve and the expected outcome.

(Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

The Early Intake Switchyard (ISY) is a 230 kV switchyard located alongside the Tuolumne River, just downstream of the Kirkwood Powerhouse (see Figure 1 in Attachment 1). The switchyard is a critical HHWP asset that provides for the transmission of electrical power generated at Kirkwood and Holm Powerhouses to Moccasin as well as the local distribution of power to HHWP's upcountry facilities. A failure of any critical component within the switchyard represents a significant loss of power generation and transmission capability which accounts for 75% of the HHWP Project annual generation.

ISY consists of an extensive array of electrical circuit breakers and disconnect switches that are installed inside of a fenced area approximately 550 feet long by 125 feet wide, and includes a control building. It was initially put into service in 1960. The transmission line to Kirkwood Powerhouse, Line 11, was put into service in 1967. Intake Switchyard provides the main accumulation, switching and transmission point for hydroelectric power generated at the Holm and Kirkwood powerhouses.

As described in Attachment 1, the tall, steep slopes adjacent to Early Intake Switchyard were severely burned by the Rim Fire. Detailed field observations performed during and after the fire identified that several types of fire damage occurred in the area that resulted in both short-term safety concerns and long-term maintenance concerns, including:

1. Potential for slope raveling and rock falls.
2. Potential for slope instability.
3. Drainage issues affecting the slopes and roads.
4. Increased erosion and sedimentation susceptibility.

A site visit performed on May 2, 2014 at ISY and the surrounding slopes confirmed the presence of hazards that continue to present serious risks to the ISY facilities and to loss of HHWP operations as a result of current slope conditions. Referring to Figure 2-2 in Attachment 1, such conditions are summarized as follows:

* Work Area 1 (Attachment 1, Figures 2-4 & 2-5): This area exhibits active slope failure conditions at this over-steepened slope that is at the edge of a 150-foot long reach of the ISY south access road, located at the east end of ISY.

* Work Area 2 (Attachment 1, Figures 2-6 & 2-7): This area exhibits active slope raveling conditions at this tall, steep slope that is immediately adjacent to a 200-foot long reach of the ISY south access road located near the center of ISY; such conditions extend approximately 200 feet vertically up the slope.

Based on the consideration of hazards observed, there are several risks ranging from minor to significant that include health & safety concerns, potential damage to ISY facilities and/or loss of HHWP operations, including: 1) Unsafe working conditions; 2) Temporary blockage of ISY access road; 3) Permanent damage to ISY access road; 4) Damage to ISY perimeter security fencing; 5) Encroachment of ISY facility perimeter; 6) Damage to electrical equipment and support structures; 7) Damage to control building; and 8) Switchyard loss of operation.

The proposed project will be designed to mitigate the existing hazards such that the above risks are no longer a threat to health and safety, damage to property, or loss of HHWP operations.

- C. Describe recent events that influenced the selection of the project
(e.g. changes in the watershed, discovery of a new hazard, zoning requirements, inter-agency agreements). (Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

The Rim Fire caused severe burning of the slopes adjacent to ISY which has increased the slope instability hazards, resulting in risks to health and safety, damage to property, and potential loss of HHWP operations. Section 1 of Attachment 1 summarizes the fire damage to slopes surrounding Early Intake Switchyard.

- D. Describe in detail how the project reduces hazard effects and risks:
(Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

As described in Section 3 of Attachment 1, the proposed project includes several hazard mitigation solutions that will address the effects of existing slope instability hazards. The hazard mitigation solutions include: 1) slope grading (flattening) with catchment walls; 2) catchment fences; 3) surface water diversions; and 4) vegetative surface stabilization.

E. Describe the full Scope of Work (SOW) of the project in detail:

If any document is attached, state its exact title.

The Project Scope of Work is described in Attachment 1 entitled "Hazard Mitigation Grant Program Sub-Application, Early Intake Switchyard Slope Stabilization Project," prepared by Black & Veatch Corporation, May 2014.

F. If the project involves ground disturbance, e.g., enlarging ditches or culverts, diversion ditches, detention basins, storm water improvements, etc., provide the following additional information:

- a. Attach/enclose studies and preliminary engineering, including any hydrological data.
- b. Attach/enclose original drawings or blueprints that show the footprint and elevations.

If any document is attached, state its exact title.

Proposed ground disturbance activities are described as part of the Project Scope of Work that is presented in Section 4 of Attachment 1 entitled "Hazard Mitigation Grant Program Sub-Application, Early Intake Switchyard Slope Stabilization Project," prepared by Black & Veatch Corporation, May 2014. The ground disturbance features are based on conceptual-level engineering assessments and project scoping; additional details of project elements will be developed during the Project's final design phase.

G. Describe any other projects or project components, whether or not funded by FEMA, which may be related to the proposed project, or are in or near the proposed project area. FEMA reviews all interrelated projects under NEPA regulations. Failure to disclose this information could jeopardize Federal funding. (Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

Recent projects in the vicinity include rehabilitation of the Intake Switchyard (2013-2014), placement of coir logs, hydromulching and rock scaling work on the slope above the switchyard for erosion control after the Rim Fire, several small scale Rim Fire debris removal projects, and hazard tree removal in powerline corridors on the slope above the switchyard (all in late 2013). Work anticipated in the project vicinity in 2014-2015 includes reconstruction of two small structures burned in the fire and rehabilitation of the Lower Cherry Aqueduct system. The latter is located across the river from ISY but will use Cherry Lake Road for equipment and materials access. No other projects are currently foreseen in the vicinity in 2016.

17. HAZARD TYPE: Required (what hazard or hazards will this project protect against?)

Check all items that apply from the following list (more than one hazard can be checked)

BIOLOGICAL	<input type="checkbox"/>	CHEMICAL	<input type="checkbox"/>
CIVIL UNREST	<input type="checkbox"/>	COASTAL STORM	<input type="checkbox"/>
CROP LOSSES	<input type="checkbox"/>	DAM/LEVEE BREAK	<input type="checkbox"/>
DROUGHT	<input type="checkbox"/>	EARTHQUAKE	<input type="checkbox"/>
FIRE	<input type="checkbox"/>	FISHING LOSSES	<input type="checkbox"/>
FLOOD	<input checked="" type="checkbox"/>	FREEZING	<input type="checkbox"/>
HUMAN CAUSE	<input type="checkbox"/>	HURRICANE	<input type="checkbox"/>
LAND SUBSISTENCE	<input type="checkbox"/>	MUD/LANDSLIDE	<input checked="" type="checkbox"/>
NUCLEAR	<input type="checkbox"/>	SEVERE ICE STORM	<input type="checkbox"/>
SEVERE STORM(S)	<input checked="" type="checkbox"/>	SNOW	<input type="checkbox"/>
SPECIAL EVENTS	<input type="checkbox"/>	TERRORIST	<input type="checkbox"/>
TORNADO	<input type="checkbox"/>	TOXIC SUBSTANCES	<input type="checkbox"/>
VOLCANO	<input type="checkbox"/>	TSUNAMI	<input type="checkbox"/>

OTHER (SPECIFY IN COMMENTS BELOW)

not applicable

18. HAZARD AND RISK ANALYSIS

1. History: Describe the hazards and risks to life, safety and improved property at least during the last 25 years in the project area. (Describe in 4,000 characters or less or Attach/enclose/enclose a WORD document):

Since the RIM FIRE in 2013, the slopes behind the Intake Switchyard have proved to be hazardous due to potential flooding and rock fall. The rock fall and flooding hazards pose a significant risk to the operational capability of the improved property Intake Switchyard and may pose a risk to operation and maintenance personnel. Table 1 summarized the significant events related to the slopes behind Intake Switchyard after the Rim Fire.

Table 1. Summary of events related to the hazards identified at Intake Switchyard after the Rim Fire.

Approximate Date	
August 2013	Rim Fire burned through Early Intake Area.
	Professional Geotechnical Engineer identified presence of rock fall hazards above Intake Switchyard .
September 2013	SFPUC/HHWP proactively performed rock scaling operation to remove the hazardous rocks that were identified.
	Boulders damaged fencing and traveled into the Switchyard and access road (Figures 1 & 2).
February 2014	Relatively minor rain event (see Figure 3) caused significant flooding that extended to the control building and into the switchyard. Additionally, a significant amount of sediment and mud was mobilized onto the access road between the slopes and the Switchyard (Figures 4 through 8).

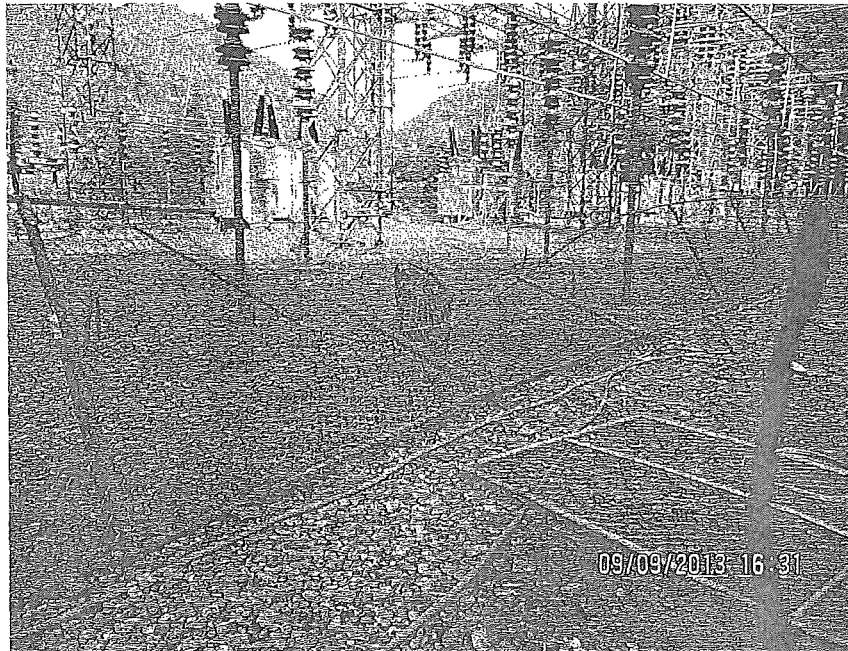


Figure 1. Boulder that traveled over or through two chain link fences and came to rest inside the Switchyard (9/9/2013).



Figure 2. Boulder that traveled over/through temporary safety fencing and came to rest on the access road behind the Switchyard (9/10/2013).

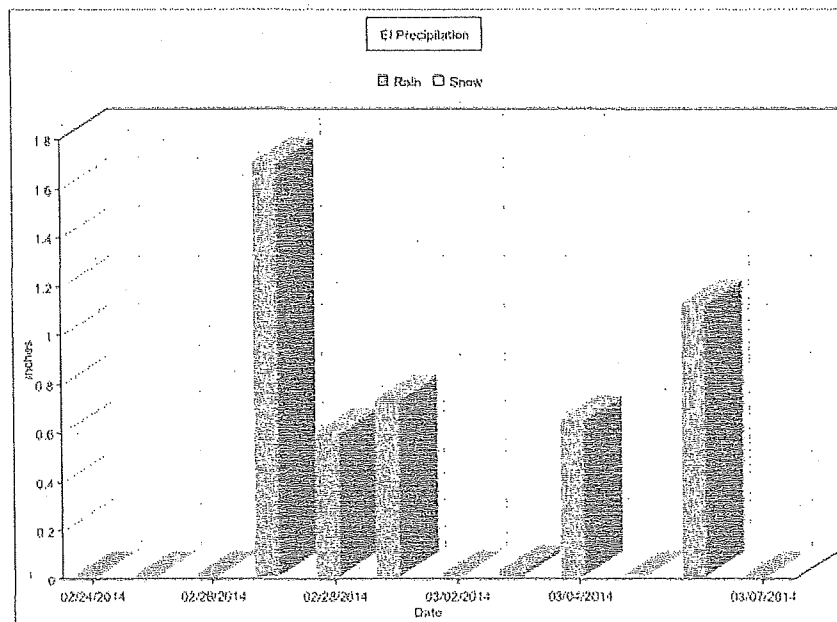


Figure 3. Rain event that caused flooding at the Intake Switchyard site.

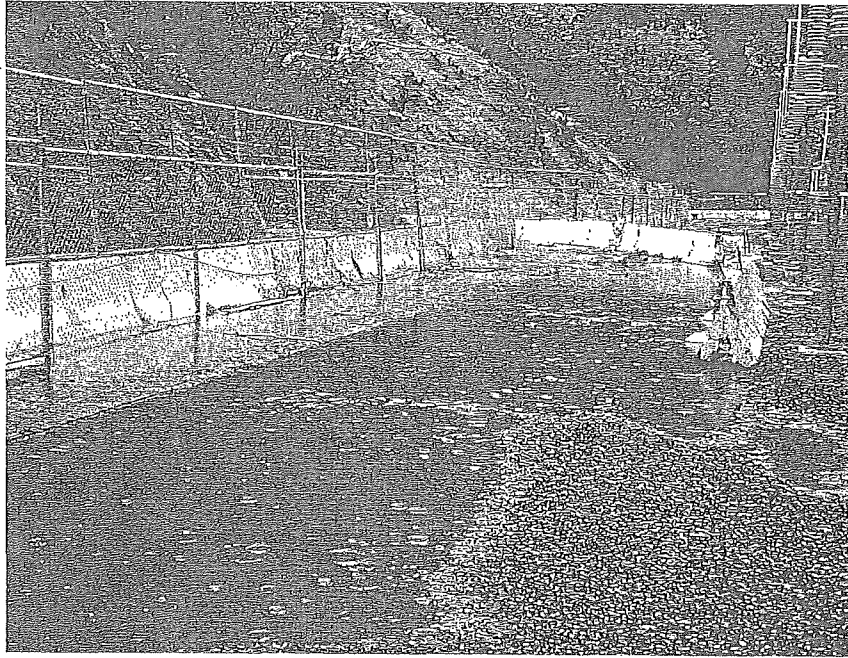


Figure 4. Flooding inside the Switchyard after rain event (2/28/2014).

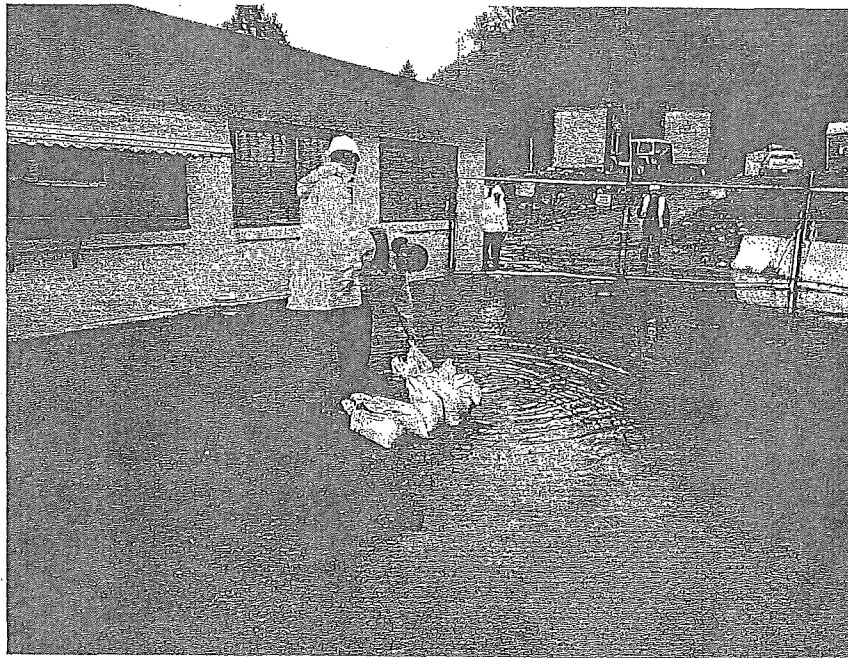


Figure 5. Flooding inside Switchyard near control building (2/28/2014).

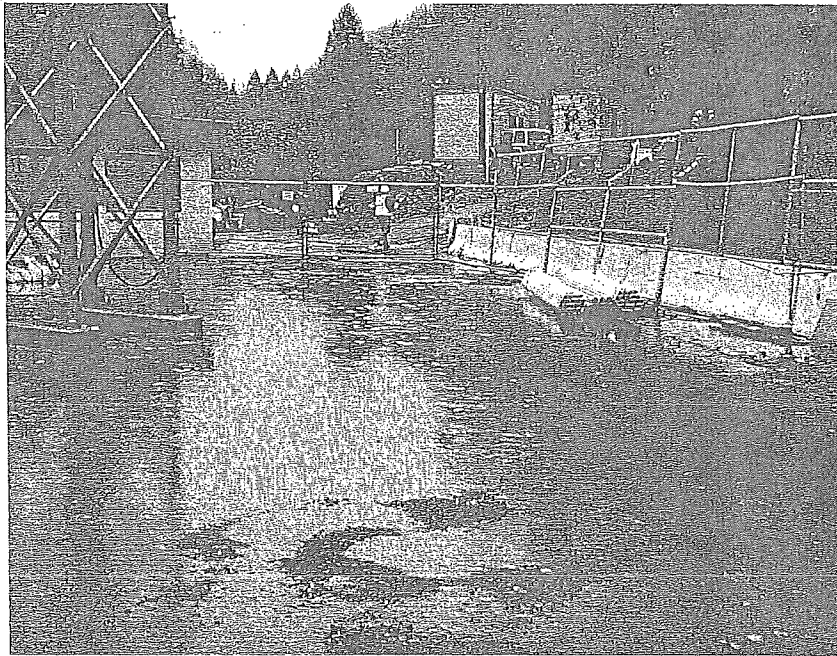


Figure 6. Flooding inside Switchyard near control building (2/28/2014).

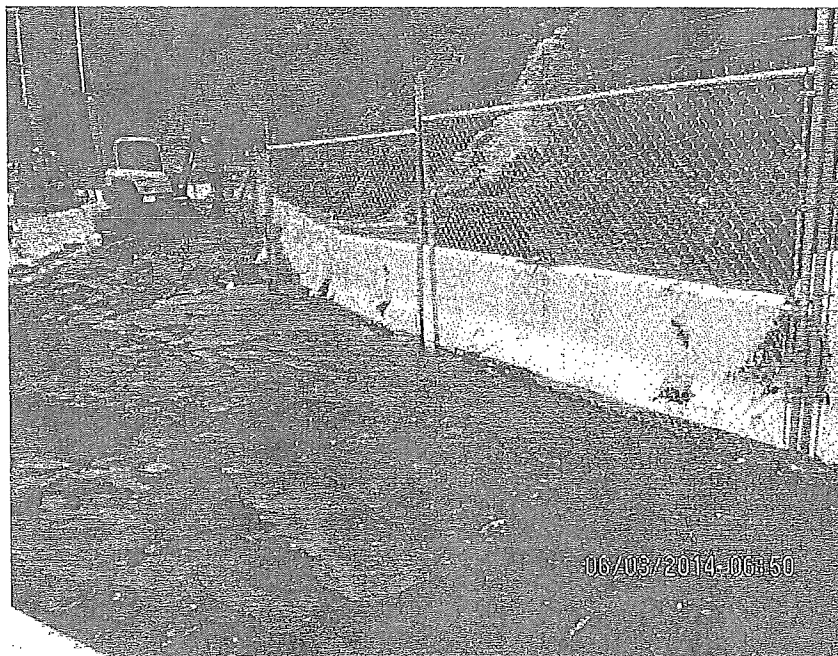


Figure 7. Mud and sediment build up after rain event (3/6/2014).



Figure 8. Mud and sediment build up after rain event (2/27/2014).

2. Alternatives: Briefly describe alternatives to your proposed project.
(Recommend returning to this question after completing PART 2 - ENVIRONMENTAL QUESTIONNAIRE)

WORK AREA 1: In Attachment 1, Section 2.2 for Work Area 1, the risks (due to active slope failure conditions at the over-steepened slope at the east end of ISY) were discussed to range from temporary road blockage to loss of switchyard operation. These risks would be affected by the alternatives as follows:

Catchment Fence: One or more catchment fences would reduce the risk of rockfall damage but would not stabilize the slope; i.e. not effective to reduce risk.

Catchment Wall: A catchment wall would collect rockfalls and slope debris but would not stabilize the slope; i.e., not effective to reduce risk.

Slope Flattening with Catchment Wall: Slope flattening would stabilize the slope, and the catchment wall would collect future rockfalls and slope debris. Effective to reduce the risk.

Retaining Wall: A retaining wall would stabilize the slope and protect the slope to eliminate future rockfalls and slope movement. Effective to reduce the risk.

WORK AREA 2: In Attachment 1, Section 2.2 for Work Area 2, the risks (due to active slope raveling conditions at the tall, steep slope located near the center of ISY) were discussed to range from temporary road blockage to loss of switchyard operation. These risks would be affected by the alternatives as follows:

Catchment Fence: One or more catchment fences would reduce the risk of rockfall damage. Effective to reduce the risk.

Catchment Wall: A catchment wall would collect rockfalls and slope debris. Effective to reduce the risk.

SURFACE WATER DIVERSIONS: For both work areas, a mitigation solution involving surface water diversions was also considered and is planned to be implemented. To the extent feasible, surface water diversion facilities would: 1) avoid the use of impervious materials (to avoid visual impacts and intrusion on the riparian belt) and 2) if possible, divert flow in each direction away from the tram cableway, which may be considered an historic property. Design details of such surface water diversions are to be developed further in a later design phase.

3. Proposed Action: Briefly describe your proposed project and why it was selected from the alternatives. (Recommend returning to this question after completing PART 2 - ENVIRONMENTAL QUESTIONNAIRE)

The four alternatives for Work Area 1 were compared in the following table. All four of the alternatives would include surface water diversions constructed uphill of the work area and the application of hydroseeded vegetative cover.

Alternative	Hazard Reduction Effectiveness	Relative Construction Cost	Relative Maintenance Cost
1A - Catchment Fences	Moderate	Moderate	Highest
1B - Catchment Wall	Moderate	Lowest	Moderate
1C - Slope Flattening with Catchment Wall	High	Moderate	Moderate
1D - Retaining Wall	Highest	Highest	Lowest

The two alternatives for Work Area 2 were compared in the following table. Both of the alternatives would include surface water diversions constructed uphill of the work area and the application of hydroseeded vegetative cover.

Alternative	Hazard Reduction Effectiveness	Relative Construction Cost	Relative Maintenance Cost
2A - Catchment Fences	Higher	Moderate	Moderate
2B - Catchment Wall	Lower	Lower	Lower

The proposed project was selected due to the reasons described more fully in Section 4 of Attachment 1 – essentially to construct the mitigation solutions offering the best hazard mitigation for the best value. The proposed project consists of the following work elements:

Mitigation Solution	Work Area 1 Mitigation	Work Area 2 Mitigation
Catchment Fences		√
Surface Water Diversion	√	√
Vegetative Surface Stabilization	√	√
Slope Flattening with Catchment Wall	√	

19. COMMUNITY INFORMATION: Please refer to Instructions, Section III, #19 for an explanation of this item.

A. Indicate if your community participates in any of the listed factors.

Select a column appropriate to your type of project: fire, flood, or earthquake.

FIRE	FLOOD	EQ
CWPP/Fire Wise/Fire Safe _____	CRS Plan _____	Shakeout Drill Participation _____
Current CEQA Activity _____	Current CEQA Activity _____	Current CEQA Activity _____
Defensible Space _____	Hydrology Study _____	URM Participation _____

B. Provide a narrative description for any of the factors you have selected from the above list.

1. Fire and drought emergency projects in the area during 2013 and 2014 have been statutorily exempted from CEQA.
2. The project is located in a remote location away from any populated communities.

SECTION IV - WORK SCHEDULE

Describe each of the major work elements and how long they will take to complete.

Some project application examples are: construction, architectural, design, engineering, inspection, testing, permits, project management, mobilization and de-mobilization.

- | | | |
|----|--|----------------------------------|
| 1. | Description: <u>Design</u> | Time Frame: <u>6 - 10 months</u> |
| 2. | Description: <u>Bid and Award</u> | Time Frame: <u>3 months</u> |
| 3. | Description: <u>Mobilization / Office Engr'g</u> | Time Frame: <u>4 months</u> |
| 4. | Description: <u>On-Site Construction</u> | Time Frame: <u>3 months</u> |
| 5. | Description: <u>Demobilization</u> | Time Frame: <u>3 Weeks</u> |
| 6. | Description: <u>As-Built Drawings</u> | Time Frame: <u>1 Month</u> |
| 7. | Description: <u>Contract Closeout</u> | Time Frame: <u>2 Months</u> |

Some or many of the above elements may overlap. Provide a Gantt chart to show any overlap in project work schedule.

Gantt chart provided: ☒ yes Not provided: ☐ no Refer to Attachment B of Attachment 1 for Gantt Chart

State the total amount of time you anticipate for this project. Total project time must not exceed a 36-month performance period. Performance period begins from the close of FEMA's application period.

MONTHS: 24

SECTION V – COST ESTIMATE

The cost estimate is a separate MS-Excel document (see instructions on page 8).

The MS-Excel file document is included as Attachment 3. The total project cost estimate is \$1,311,000.

COST ESTIMATE NARRATIVE:

(This area to be used for narrative or justification to support cost estimates listed in Section V)

Failure to provide detailed information can significantly impede FEMA's approval of your project application.

Additional details justifying the development of line item costs shown in the project cost estimate spreadsheet are presented here.

Refer to next page

Item A – Work Area 1 Slope Grading by Earthwork Crew

This line item estimates 10 days of a large earthwork crew with equipment. The crew costs are:

EARTHWORK CREW-DAY UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$972
Safety Officer	\$ / Day	0.5	\$972	\$486
General Laborers (5)	\$ / Day - Ea	5	\$583	\$2,916
Front-End Loader with Operator (2)	\$ / Day - Ea	2	\$2,268	\$ 4,536
Backhoe with Operator (1)	\$ / Day - Ea	1	\$2,268	\$2,268
Haul Trucks (3)	\$ / Day - Ea	3	\$1,296	\$3,888
Compactor with Operator (1)	\$ / Day - Ea	1	\$2,268	\$2,268
Total Crew-Day Unit Cost				\$17,334

Item B – Work Area 1 Catchment Wall Construction

This line item estimates 100 feet of a catchment wall. The per-foot wall costs are:

Catchment Wall (100 ft long; 8 ft high):	Unit	Qty	Unit Cost	Subtotal
Excavate Foundations (13, drilled 24" x 96")	EA	13	\$972	\$12,636
Concrete Foundations (13, 1 CY each)	CY	13	\$810	\$10,530
Furnish & Install H-Piles (13, 40 plf)	LB	8320	\$5	\$40,435
Install Timber Lagging (800 sq. ft., 6" x 8")	SF	800	\$41	<u>\$32,400</u>
Subtotal				\$96,000
Length				100
Per-Foot Wall Cost				\$960.00

Item C – Work Area 2 Catchment Fence Construction

This line item estimates 800 feet of catchment fences. The per-foot fence costs are:

Catchment Fences at Work Area 2 (800 ft long; 8 ft high):		Qty	Unit Cost	Subtotal
Excavate Foundations (80, drilled piers)	EA	80	\$972	\$77,760
Concrete Foundations (80)	CY	80	\$1,215	\$97,200
Furnish & Install Fence Posts (80)	EA	80	\$324	\$25,920
Furnish & Install Fencing (6,400 sq. ft.)	SF	6400	\$16	\$103,680
Tie-Backs (80)	EA	80	\$972	<u>\$77,760</u>
Subtotal				\$382,400
Length				800
Per-Foot Fence Cost				\$478.00

Item D – Surface Water Diversion – V-Ditch Construction

This line item estimates 2000 feet of V-Ditch construction. The per-foot ditch costs are \$133.65, as follows:

V-DITCH EXCAVATION UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$972
General Laborers (6)	\$ / Day - Ea	6	\$583	\$3,499
Backhoe with Operator (1)	\$ / Day - Ea	1	\$2,268	\$2,268
Compactor with Operator (1)	\$ / Day - Ea	1	\$2,268	\$2,268
Total Crew-Day Unit Cost		0		\$9,007
Daily Excavation Production Rate	Ft/Day			400
V-Ditch Excavation Unit Cost	\$/Ft			\$23
V-DITCH LINING UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$972
General Laborers (6)	\$ / Day - Ea	6	\$583	\$3,499
Concrete Pumper Truck with Operator	\$ / Day - Ea	1	\$3,240	\$3,240
Concrete Material & WWF	CY	6	\$567	\$3,402
Total Crew-Day Unit Cost				\$11,113
Daily Lining Production Rate	Ft/Day			100
V-Ditch Lining Unit Cost	\$/Ft			\$111

The above cost items do not include contractor mobilization and demobilization.

Item E – Mobilization / Demobilization for Line Items A - E

The estimate includes 5% of the subtotal of Line Items A - E

SECTION VI – BENEFIT / COST EFFECTIVENESS

Complete the following information. Refer to Instructions Section VI on page #9 for detailed requirements. Most Projects will utilize one Benefit Cost Analysis (BCA).

Enter Benefit Cost Ratio Number (BCR) > 2.08

Enter Net Present Value or Benefits > \$3,642,972

Enter Total Project Cost Estimate > \$1,750,280.

Enter Benefit Cost Ratio >

A. Describe damage history:

1. Current\previous damage:

Provide a description of the damage history below:

Year Frequency of event Damages

Refer to discussion in Section III, Item 18.1

2. Potential for future damage:

Is the structure/property within scope of project, e.g., buildings, crops, roads, facilities, etc. (Either describe in 4,000 characters or less or attach/enclose separate MS-word document).

Future damage will be significantly reduced after mitigation. Refer to Section 4.6 of Attachment 1 for further discussion.

B. Describe any project benefits not listed in your benefit cost analysis.

All of the benefits are described in Section 4.6 and Attachment D of Attachment 1

1. Describe the useful life of project:

Refer to your DDT / Data Documentation Template

(Either describe in 4,000 characters or less or attach/enclose separate MS-word document).

The project useful life is the estimated amount of time (in years) that the mitigation action will be effective. The Project Useful Life Summary Table located in the BCA software provides Standard Values and acceptable useful life limits for a variety of mitigation projects. For this project, the project useful life is selected to be 30 years, as the expected longevity of these facilities that are composed of wood, steel and fencing materials. This is similar to what would be the expected useful life of buildings.

2. If you are supplying a benefit cost ratio:

Provide a detailed description of the method you utilized. (Either describe in 4,000 characters or less or attach/enclose separate MS-word document).

The method used to evaluate the project benefits and, therefore, the benefit-cost analysis is discussed in Attachment 1, Section 4.6. The BCR was calculated using FEMA BCA V4.8.

SECTION VII - MAINTENANCE ASSURANCE DESCRIPTION:

Identify any maintenance activities required to preserve the long-term mitigation effectiveness of the project. Attach or enclose maintenance schedule, estimated costs, and an identified entity responsible for completing maintenance. (see sample Maintenance letter on page 14 of instructions).

1. Annual cost of maintenance before mitigation and what the maintenance will include. (Not needed if project is not tied to an existing capital improvement) (Either describe in 4,000 characters or less or attach/enclose separate Word document).

The expected annual maintenance activities and associated estimated costs are described in Section 4.4 of Attachment 1 entitled "Hazard Mitigation Grant Program Sub-Application, Early Intake Switchyard Slope Stabilization Project," prepared by Black & Veatch Corporation, May 2014. A letter of assurance is included as Attachment 5.

SECTION VIII - NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

- A. Is the jurisdiction/community where the project is located participating in the NFIP? If "YES", are they in good standing?
(Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

Yes, local community in which project is located is Tuolumne County; they participate in the NFIP.

- B. Is this project located in a floodplain or floodway designated on a FEMA Flood Insurance Rate Map (FIRM) or Flood Boundary/Floodway Map (FB/FWM)? If "YES", mark the project location on the FIRM or FB/FWM and attach/enclose to application. (Either describe in 4,000 characters or less or attach/enclose separate MS-word document)

No. The project work area is located outside of the FEMA Effective 100-year floodplain according to the California Department of Water Resources website (<http://gis.bam.water.ca.gov/bam/>). The project site is depicted on a FEMA FIRM, predominantly at the northern-most edge of Section 06109C1275C. The project work area is outside of the floodplain area indicated on the map at the following FEMA FIRM website: [https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=1&panelIds=06109C0950C\\$06109C1275C&Type=pbp&nonprinted=&unmapped=](https://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=1&panelIds=06109C0950C$06109C1275C&Type=pbp&nonprinted=&unmapped=).

- C. Provide the following:

1. FIRM (FB/FWM) panel number: > 06109C1275C
2. FIRM zone designations: > D
3. NFIP community id number: > 060411# Tuolumne County

- D. Public Notice Requirements, CFR 44, 9.8:
Has sub-applicant provide opportunity for early public involvement in the decision-making process.
Public Notice Provided: ☐ Yes Not provided: ☒ No

PART II – ENVIRONMENTAL QUESTIONNAIRE

SECTION I – REGULATIONS

The Environmental Questionnaire Part II must be completed and submitted with the project sub-application. Refer to instructions Part II, Section I on page #10 for Environment regulations.

Environmental data is required for project applications when submitting a project to the Cal OES for the FEMA Hazard Mitigation Grant Program. Environmental review is typically the most time consuming aspect of project funding approval.

Provide a detailed response to each question and attach supporting documentation in order to comply with FEMA's frontloading requirements discussed in Part II of the Hazard Mitigation Assistance Unified Guidance 2013.

SECTION II – ENVIRONMENTAL CHECKLIST

Environmental checklist

- (1) Double click a box in the YES NO N/A columns
(2) Menu will appear
(3) ✓ Check box enabled,
(4) Use radio button for not checked or checked

<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>NATIONAL HISTORIC PRESERVATION ACT</u>
------------	-----------	------------	---

- | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Are any structures involved in the project? (If so, provide construction dates of all structures). |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with the State Historic Preservation Officer (SHPO) conducted? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | If applicable, was consultation with the Tribal Historic Preservation Officer (THPO) conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: The State Historic Preservation Officer; the appropriate Tribal Historic Preservation Officer

<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>ARCHEOLOGICAL RESOURCES PRESERVATION ACT</u>
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- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will there be any ground disturbance? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will there be any potential disturbance to cultural resources? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with SHPO/THPO conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: The State Historic Preservation Officer; the appropriate Tribal Historic Preservation Officer

YES NO N/A ENDANGERED SPECIES ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will there be any disturbance to the physical environment? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Are any threatened or endangered species present in the project area? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Has critical habitat been identified in the project area? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with U.S. Fish and Wildlife Service (USFWS) and CA Department of Fish and Wildlife conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agencies: The National Marine Fisheries Service and U.S. Fish and Wildlife Service

YES NO N/A FISH AND WILDLIFE COORDINATION ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is the project located in or near a waterway or body of water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Will the project cause any modification to the waterway or body of water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with USFWS, National Marine Fisheries Service, and State Wildlife Agency conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: U.S. Fish and Wildlife Service and CA Department of Fish and Wildlife

YES NO N/A FARMLANDS PROTECTION POLICY ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project located in or near designated prime and unique farmlands? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Will the project convert any designated prime and or farmlands? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with Natural Resources Conservation Service (NRCS) conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: U.S. Dept. of Agriculture's Natural Resources Conservation Service, Dept. of Conservation (Division of Land Resource Protection)

YES NO N/A CLEAN AIR ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will the project result in temporary or permanent air emissions? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: State Environmental Agency or State Health Department, CA/EPA Air Resources Board and Local Air Quality Mgmt. Districts

YES NO N/A CLEAN WATER ACT (Section 404)
RIVERS AND HARBORS ACT (Section 10)

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will the project involve dredging or disposal of dredged material, excavation, adding fill material or result in any modification to "waters" of the U.S.? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Will the project involve bank stabilization or installing transmission in "waters" of the U.S.? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will the project be near or in navigable waters? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with the U.S. Army Corps of Engineers (USACE) conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Will a permit be required? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Have you submitted an application to the USACE? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is a copy of the application attached? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Does a nationwide permit apply? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Does a general permit apply? |

COMMENT: "waters" includes waters subject to ebb and flow of tide; wetlands; lakes, rivers, streams, mudflats, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, impoundments, tributaries, territorial seas, and wetlands adjacent to waters previously identified.

Coordinating Agency: U.S. Army Corps of Engineers

YES NO N/A WILD AND SCENIC RIVERS ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is the project located near or in a designated wild or scenic river? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: U.S. Fish and Wildlife Service and the U.S. Forest Service within their jurisdiction.

YES NO N/A WILDERNESS ACT

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project located near or in a designated wilderness or coastal wildlife area? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agency: U.S. Fish and Wildlife Service, National Park Service and the Bureau of Land Management

YES NO N/A OTHER RELEVANT LAWS AND ENVIRONMENTAL REGULATIONS

- | | | | |
|-------------------------------------|--------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Do any other laws and/or regulations apply to the project? If so, please reference the regulation and attach proper documentation. |
|-------------------------------------|--------------------------|--------------------------|--|

Coordinating Agency: Applicable State Statutory Requirements, Executive and Administrative Orders and any local environmental requirements.

EXECUTIVE ORDERS

YES NO N/A E.O. 11988 – FLOODPLAINS

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project located in a FEMA-identified 100-year or 500-year floodplain? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project located in a FEMA-identified floodway? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is the project depicted on a FEMA FIRM (Flood Insurance Rate Map)? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is the map attached? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Was consultation with local floodplain administrator and state water control agency conducted? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are comments attached? |

Coordinating Agencies: Local community floodplain administrator and the state water control agency. Because the project work area is located outside of the 100-year floodplain, references to NFIP are not applicable.

*YES NO N/A E.O. 11990 – WETLANDS

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project in an area that is inundated or saturated by surface or ground water (e.g. swamps, marshes, bogs, etc.) or in or near identified wetlands? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project depicted on a National Wetlands Inventory (NWI) map? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the map attached? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are agency comments attached? |

COMMENT: Wetlands are identified by obtaining a National Wetlands Inventory (NWI) map from the U.S. Fish and Wildlife Service, the Army Corps of Engineers, or their websites. The Natural Resource Conservation Service also has wetland maps for agricultural land.

Coordinating Agencies: U.S. Fish and Wildlife Service, Army Corps of Engineers, and Natural Resources Conservation Service

YES NO N/A E.O. 12898 – ENVIRONMENTAL JUSTICE

- | | | | |
|--------------------------|-------------------------------------|--------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is the project in an area of low income or minority populations? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Will the project disproportionately impact any low income or minority populations? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Is any socio-economic data attached? |

COMMENT: If the project would disproportionately adversely affect low income or minority populations, or would disproportionately assist higher income populations at the exclusion of lower income or minority populations, then E.O. 12898 must be addressed.

Coordinating Agency: Local census office

EXTRAORDINARY CIRCUMSTANCES (FEMA 44 CFR §10.8 (d)(3))

If Extraordinary Circumstances exist within an area affected by an action, such that an action that is categorically excluded from NEPA compliance may have a significant adverse environmental impact, an environmental assessment shall be prepared. Please answer yes or no to the questions below:

YES NO

- | | | |
|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Greater scope or size than normally experienced for a particular category of action; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Actions with a high level of public controversy; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potential for degradation, even though slight, of already existing poor environmental conditions; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Employment of unproven technology with the potential adverse effects or actions involving unique or unknown environmental risks; |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Presence of endangered or threatened species or their critical habitat, or archaeological cultural, historical or other protected resources; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Presence of hazardous or toxic substances at levels which exceed Federal, state, or local regulations or standards requiring action or attention; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Actions with the potential to affect special status areas adversely or other critical resources such as wetlands, coastal zones, wildlife refuge and wilderness areas, wild and scenic rivers, sole or principal drinking water aquifers; |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potential for adverse effects on health or safety; and |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potential to violate a federal, state, local, or tribal law or requirement imposed for the protection of the environment. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potential for significant cumulative impact when the proposed action is combined with other past, present and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves. |

SECTION III - ALTERNATIVES

Identify at least 3 alternatives:

ALTERNATIVE #1 – the No Action alternative evaluates the consequences of taking no action and leaving conditions as they currently exist. (Either describe in 4,000 characters or less or attach separate MS-word document)

Section 2 of Attachment 1 provides a summary of the existing site hazards and a description of the risks that SFPUC will experience if the No Action alternative were to be considered. Such risks are the results of multiple hazards including potentially-extensive slope failure at the east end of ISY that would initiate localized and/or massive ground movement(s), and on-going, large-scale and extensive raveling of the steep slope located at the center of ISY, that would initiate rock falls of varying size (small rocks to large boulders) and velocity.

Depending on the degree of hazard severity, one or more of the following risks could result:

1. Unsafe working conditions.
2. Temporary blockage of ISY access road.
3. Permanent damage to ISY access road.
4. Damage to ISY perimeter security fencing.
5. Encroachment of ISY facility perimeter.
6. Damage to electrical equipment and support structures.
7. Damage to control building.
8. Switchyard loss of operation.

ALTERNATIVE #2 - (Proposed Action) – Is the Sub-applicant's proposed project to solve the problem. Explain why the proposed action is the preferred alternative. Identify how the preferred alternative would solve a problem, why the preferred alternative is the best solution for the community, why and how the alternative is environmentally preferred and why the project is the economically preferred alternative. (Either describe in 4,000 characters or less or attach separate MS-word document)

Section 3 of Attachment 1 provides a description of the hazard mitigation solutions that were identified to address the hazards observed at the site. Such mitigation solutions were then combined into a set of alternatives that were evaluated on the basis of hazard reduction effectiveness; relative construction cost; and relative maintenance cost.

The proposed project was selected due to the reasons described more fully in Section 4 of Attachment 1 – essentially to construct the mitigation solutions offering the best hazard mitigation for the best value. The proposed project consists of the following work elements:

Mitigation Solution	Work Area 1 Mitigation	Work Area 2 Mitigation
Catchment Fences		√
Surface Water Diversion	√	√
Vegetative Surface Stabilization	√	√
Slope Flattening with Catchment Wall	√	

ALTERNATIVE #3 – (List the Second Action alternative that would also solve the problem). It must be a viable project that could be substituted in the event the proposed action is not chosen. (Either describe in 4,000 characters or less or attach separate MS-word document)

Should the proposed project not be selected, the next best alternative, although it would be more expensive to construct, would consist of the following work elements:

Mitigation Solution	Work Area 1 Mitigation	Work Area 2 Mitigation
Catchment Fences		√
Surface Water Diversion	√	√
Vegetative Surface Stabilization	√	√
Retaining Wall	√	

Please print this page – original signatures are REQUIRED.

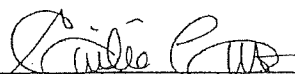
SECTION IV – PROJECT CONDITIONS

Indicate by checking each box below that you will adhere to these listed project conditions.

- ☒ If during implementation of the project, ground-disturbing activities occur and artifacts or human remains are uncovered, all work will cease and FEMA, Cal OES, and SHPO will be notified.
- ☒ If deviations from the approved scope of work result in design changes, the need for additional ground disturbance, additional removal of vegetation, or will result in any other unanticipated changes to the physical environment, FEMA will be contacted and a re-evaluation under NEPA and other applicable environmental laws will be conducted.
- ☒ If wetlands or waters of the U.S. are encountered during implementation of the project, not previously identified during project review, all work will cease and FEMA will be notified.

Name: Emilio Cruz
Sub-applicant Authorized Representative

Title: AGM Infrastructure

Signature: 
Sub-applicant Authorized Representative

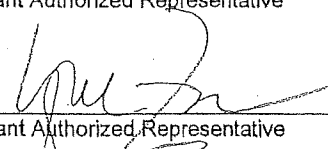
Date: 29 MAY 14

SECTION V - AUTHORIZATION

The undersigned does hereby submit this sub-application for financial assistance in accordance with the Federal Emergency Management Agency's Hazard Mitigation Grant Program and the State Hazard Mitigation Administrative Plan and certifies that the sub-applicant (e.g., organization, city, or county) will fulfill all requirements of the program as contained in the program guidelines and that all information contained herein is true and correct to the best of our knowledge.

Name: Monique Zmuda
Sub-applicant Authorized Representative

Title: Deputy Controller

Signature: 
Sub-applicant Authorized Representative

Date: 5/29/14

Name of organization: City and County of San Francisco

TABLE OF CONTENTS - Attachments

Attachment 1. Report entitled "Hazard Mitigation Grant Program Sub-Application, Early Intake Switchyard Slope Stabilization Project," prepared by Black & Veatch Corporation, May 2014; authorized by SFPUC Agreement CS-340E, Task Order No. 15. File Name = "Cal OES Hazard Mitigation Grant Report 053014.PDF"

Attachment 1 provides answers to the following questions:

PART	Section	Question No.	Title
I	III	13	Mapping Requirements – see maps and photographs in Attachment 1.
I	III	16.B	Description of Problem – see also description of hazards and risks in Attachment 1, Section 2.
I	III	16.C	Recent events – see Section 1 of Attachment 1 for further description of damages caused by the Rim Fire to the slopes surrounding ISY.
I	III	16.D	Description of how project reduces hazard effects and risks – See Section 3 of Attachment 1 that describes the proposed hazard mitigation solutions that were evaluated.
I	III	16.E	Scope of Work – see Attachment 1, Section 4 for a complete description of the Scope of Work.
I	III	16.F	Additional information regarding round disturbance – see Attachment 1, Section 4, for a description of expected ground disturbance activities.
I	III	18.2	Section 2.2 of Attachment 1 discusses the risks present at the site and the effectiveness of the alternatives that were evaluated as part of the project development.
I	III	18.3	Sections 3.3, 3.4 and 3.5 of Attachment 1 discuss the reasons that the preferred alternative (proposed action) was selected.
I	IV	--	Attachment 1, Section 4.2 summarizes the design and construction schedule, and a Gantt chart is included in Attachment B of Attachment 1.
I	V	--	Attachment 1, Section 4.3 discusses assumptions used to develop the project cost estimate. A copy of the project cost estimate developed for the Project is included in Attachment C of Attachment 1. In addition, a separate "Project Cost Estimate Excel Spreadsheet" is included as Attachment 3 (see below).
I	VI	--	Technical information that is found in Section 4 of Attachment 1 was utilized as part of responding
I	VII	--	Section 4.4 of Attachment 1 addresses the estimated cost of annual maintenance that is expected to be needed after completion of construction of the mitigation project.

Attachment 2. Document entitled "Environmental Checklist, Early Intake Switchyard Slope Stabilization Project," prepared by San Francisco Public Utilities Commission, Bureau of Environmental Management, May 2014. File Name = "Attachment 2 Environmental Checklist.PDF"

Attachment 2 provides comments and additional clarifications to answers given in the Environmental Checklist in Part II, Section II.

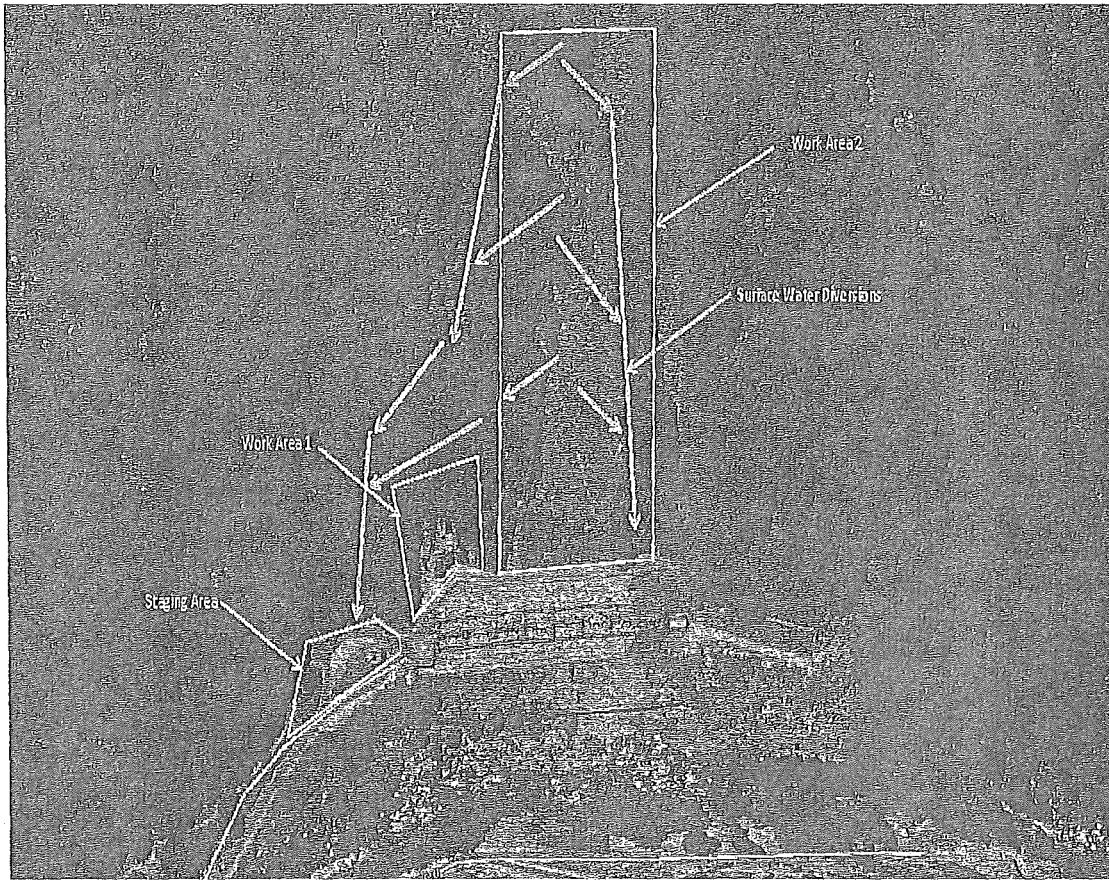
Attachment 3. Project Cost Estimate Excel Spreadsheet, prepared by Black & Veatch, May 2014. File Name = "ISY Project Cost Estimate Spreadsheet.xls"

Attachment 4. NFIP Flood Insurance Rate Map, Panel 1275C.

Attachment 5. Maintenance Letter, May 29, 2014.

Attachment 1

Report entitled "Hazard Mitigation Grant Program Sub-Application, Early Intake Switchyard Slope Stabilization Project,"
prepared by Black & Veatch Corporation, May 2014



**RIM FIRE EMERGENCY SERVICES CONTRACT
Hazard Mitigation Grant Program Sub-Application
Early Intake Switchyard Slope Stabilization Project**

**San Francisco Public Utilities Commission
Hetch Hetchy Water & Power**

Agreement No. CS-340E

Task Order No. 15

30 May 2014



BLACK & VEATCH
Building a world of difference.

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SFPUC Hetch Hetchy Water & Power (HHWP)

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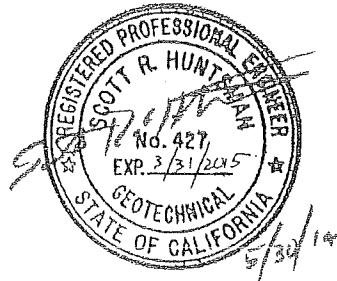
ACKNOWLEDGEMENTS

This report has been prepared under the direction of the following Black & Veatch engineering professionals, licensed in the State of California:

Paul R. Kneitz, P.E.
B&V Project Manager



Scott R. Huntsman, Ph. D., P.E., G.E.
B&V Geotechnical Engineer



1.0 INTRODUCTION

The “Rim Fire” started on approximately August 16, 2013 in Tuolumne County, California and continued burning through September 2013 with only partial containment. The fire burned areas of the Stanislaus National Forest and Yosemite National Park in the vicinity of California State Highway 120 east of the town of Groveland. Numerous assets owned and operated by Hetch Hetchy Water & Power (HHWP) were affected by the fire.

In connection with Task Order No. 6 of San Francisco Public Utilities Commission (SFPUC) Contract CS-340E, Black & Veatch assisted HHWP to develop planning-level descriptions of fifty-eight (58) proposed recovery projects that would return HHWP assets to their pre-fire condition. Scope of work, budgeting and scheduling information for each of the proposed recovery projects was presented in the November 2013 document entitled “Asset Recovery Plan.” The SFPUC & HHWP are using the Asset Recovery Plan to support fire recovery financial planning and to make decisions regarding the implementation of specific asset recovery projects.

Subsequently, SFPUC has indicated that it is eligible to prepare and submit a sub-application under the State of California Governor’s Office of Emergency Services (Cal OES) “Hazard Mitigation Grant Program (HMGP)” for the Early Intake Switchyard Slope Stabilization Project. HHWP has requested Black & Veatch to provide management, coordination, and general technical services to assist with its HMGP sub-application.

1.1 Early Intake Switchyard (ISY)

The Early Intake Switchyard (ISY) is a 230 kV switchyard located alongside the Tuolumne River, just downstream of the Kirkwood Powerhouse (Figure 1). The switchyard is a critical HHWP asset that provides for the transmission of electrical power generated at Kirkwood and Holm Powerhouses to Moccasin as well as the local distribution of power to HHWP’s upcountry facilities. A failure of any critical component within the switchyard represents a significant loss of power generation and transmission capability which accounts for 75% of the HHWP Project annual generation.

ISY consists of an extensive array of electrical circuit breakers and disconnect switches that are installed inside of a fenced area approximately 550 feet long by 125 feet wide, and includes a control building. It was initially put into service in 1960. The transmission line to Kirkwood Powerhouse, Line 11, was put into service in 1967. Intake Switchyard provides the main accumulation, switching and transmission point for hydroelectric power generated at the Holm and Kirkwood powerhouses.



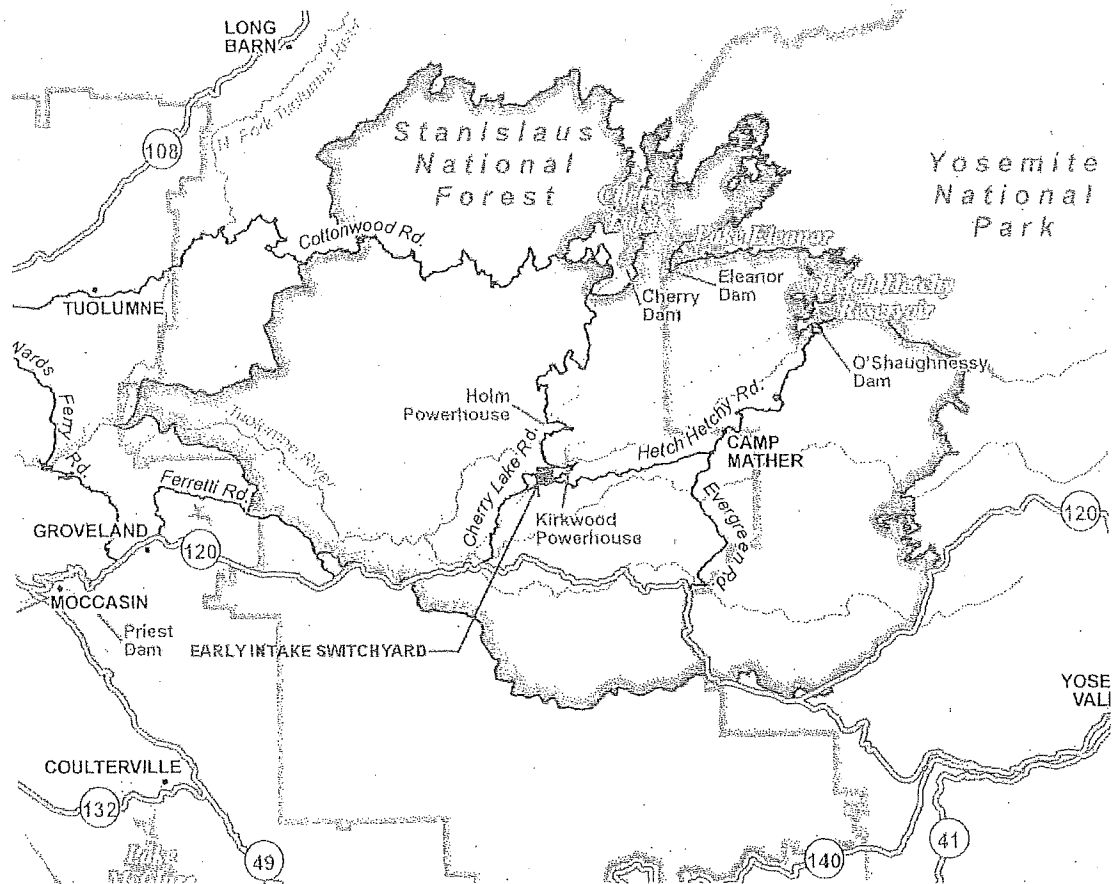


Figure 1-1: General Location of Early Intake Switchyard

1.2 Rim Fire Damage to Slopes Surrounding ISY and Related Effects

The tall, steep slopes adjacent to Early Intake Switchyard were severely burned by the Rim Fire. Detailed field observations performed during and after the fire identified that several types of fire damage occurred in the area that resulted in both short-term safety concerns and long-term maintenance concerns, including:

- Potential for slope raveling and rock falls.
- Potential for slope instability.
- Drainage issues affecting the slopes and roads.
- Increased erosion and sedimentation susceptibility.

In addition to ash contamination caused to the ISY facilities, there was collateral damage caused to items in the area. This included: 1) fire damage caused to insulators that were boxed and stored onsite as part of an ISY construction project just underway; 2) damage to disconnect switch parts that were in crates and burned, also part of the new project; 3) damage to the optical ground wire between ISY and Holm; and 4) destruction to a contractor's backhoe.

SFPUC Hetch Hetchy Water & Power (HHWP)

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Field assessments of post-fire conditions at ISY and the surrounding area are documented in multiple reports prepared by Black & Veatch in 2013, including:

- Agreement CS-340E, Task Order No. 6, Rim Fire Emergency Planning Report; Asset Recovery Plan; Black & Veatch Corporation, November 2013.
- Agreement CS-340E, Task Order No. 2, Roads, Slopes and Bridges; Assessment of Roads, Slopes and Bridges - Overall Report; Black & Veatch Corporation, October 2013.
- Agreement CS-340E, Task Order No. 6, Rim Fire Emergency Planning Report; Memorandum – Intake Switchyard Assessment; Black & Veatch Corporation, October 8, 2013.



Figure 1-2: Rockfalls at Slope along South Edge of ISY (August 27, 2013)



Figure 1-3: Severely Burned Barren Slope above Intake Switchyard (August 27, 2013)

SFPUC Hetch Hetchy Water & Power (HHWP)
RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15
HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

1.3 Purpose of This Report

The purpose of this report is to document the mitigation planning, project scoping (technical feasibility and cost-effectiveness), and environmental planning and compliance activities that were performed by SFPUC and Black & Veatch in developing the Early Intake Switchyard Slope Stabilization Project (Project), that will address the significant risk of damage to the ISY resulting from the Rim Fire's effects on the surrounding area. It is intended that this report become an attachment to the City's HMGP sub-application for the Project.

As an attachment to the City's HMGP sub-application, the report includes detailed documentation of the following activities for the Project:

- Early Intake Switchyard - Hazard & Risk Analysis.
- Alternatives for ISY Slope Stabilization Project.
 - Prospective Hazard Mitigation Solutions.
 - Identification of Project Alternatives.
 - Evaluation of Alternatives.
 - Selection of Preferred Project Alternative.
- Development of the Proposed Project:
 - Project Description / Scope of Work.
 - Project Design and Construction Schedule.
 - Project Cost Estimate.
 - Annual Maintenance Requirements.
 - Potential Impacts to HHWP Operations.
 - Benefit-Cost Effectiveness.



2.0 EARLY INTAKE SWITCHYARD – HAZARD & RISK ANALYSIS

This section summarizes the May 2014 field observations performed. As a first step in scoping the requirements for the ISY Slope Stabilization Project, Black & Veatch performed a field engineering review of the existing site conditions on May 2, 2014. The field assessment was performed by Scott Huntsman, Ph. D., P.E., G.E., B&V Geotechnical Engineer, and Tom Walker, P.E., B&V Civil Engineer. The area surveyed is generally indicated by the red border shown on Figure 2-1.

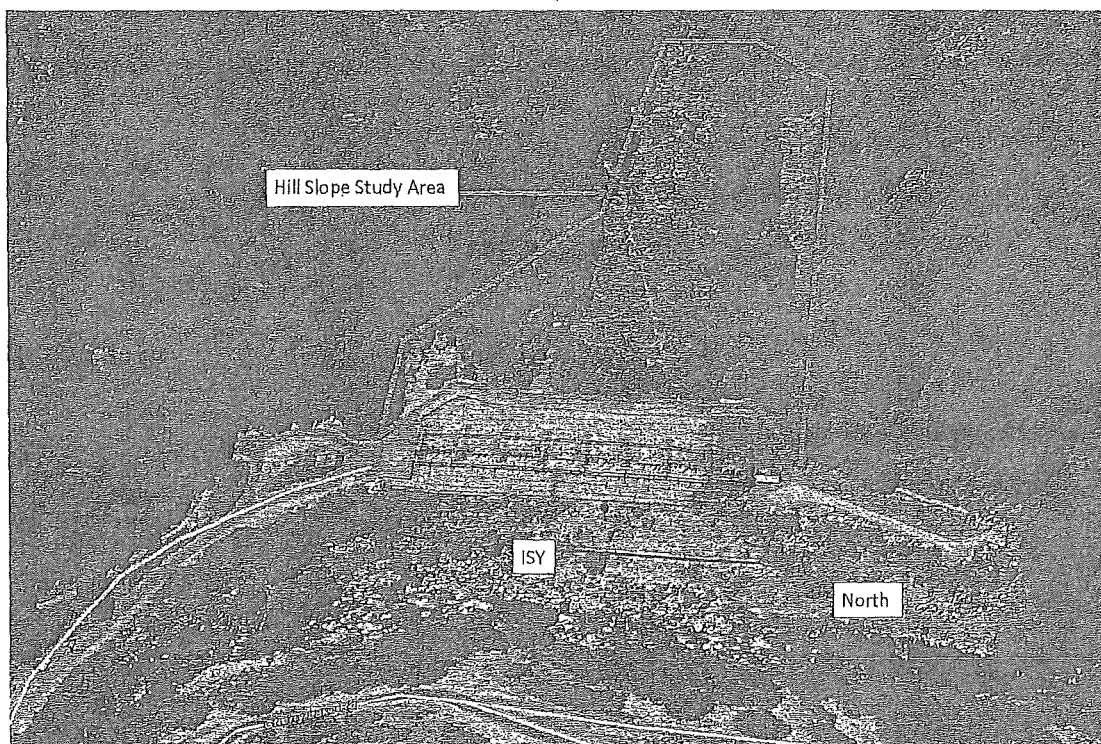


Figure 2-1: Initial Study Limits of ISY Slope Stabilization Project

2.1 ISY Site - Summary of Hazards (May 2014)

The site visit performed on May 2, 2014 at ISY and the surrounding slopes confirmed the presence of hazards that continue to present serious risks to the ISY facilities and to loss of HHWP operations as a result of current slope conditions. Referring to Figure 2-2, such conditions are summarized as follows:

- Work Area 1 (Figures 2-4 & 2-5): This area exhibits active slope failure conditions at this oversteepened slope that is at the edge of a 150-foot long reach of the ISY south access road, located at the east end of ISY.
- Work Area 2 (Figures 2-6 & 2-7): This area exhibits active slope raveling conditions at this tall, steep slope that is immediately adjacent to a 200-foot long reach of the ISY south access road located near the center of ISY; such conditions extend approximately 200 feet vertically up the slope.



SFPUC Hetch Hetchy Water & Power (HHWP)

RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

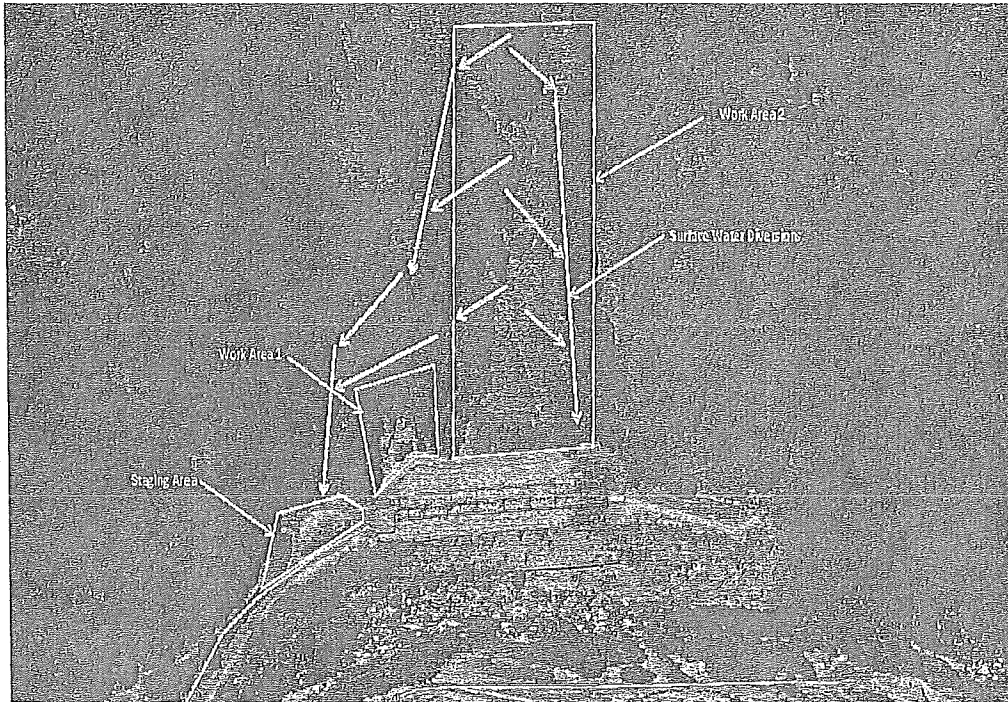


Figure 2-2: Overview of Slope Problems Observed South of ISY

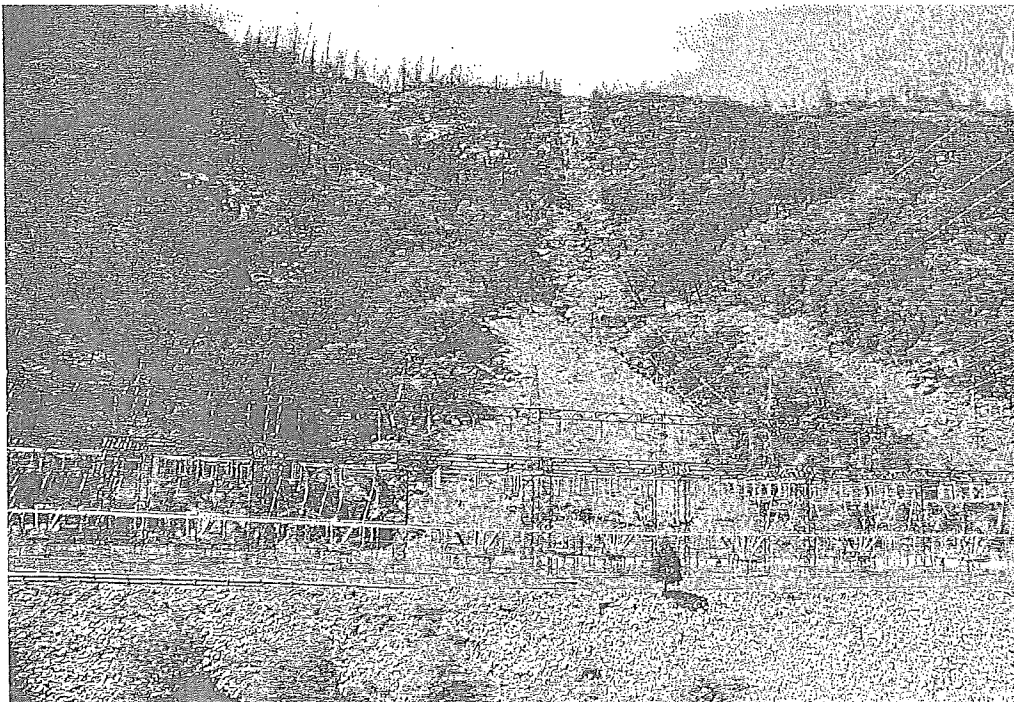


Figure 2-3: Photograph of Slope to the South of ISY (May 2, 2014)



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RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

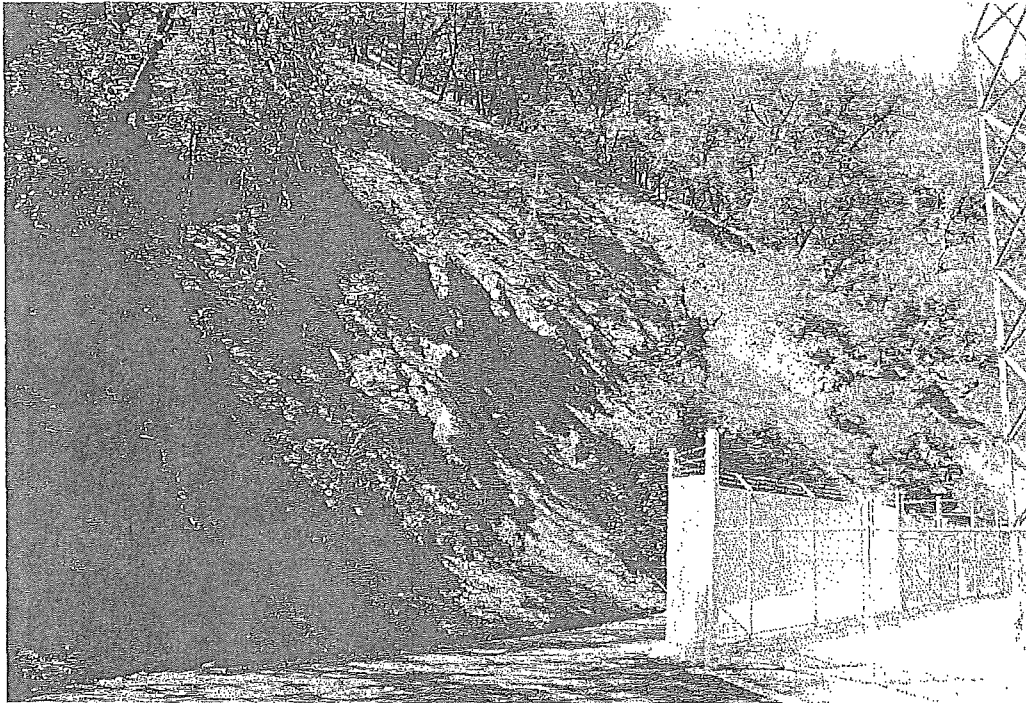


Figure 2-4: Work Area 1 – Active Slope Failure at East End of ISY (May 2, 2014)



Figure 2-5: Work Area 1 – Active Slope Failure at East End of ISY (May 2, 2014)

SFPUC Hetch Hetchy Water & Power (HHWP)
RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15
HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

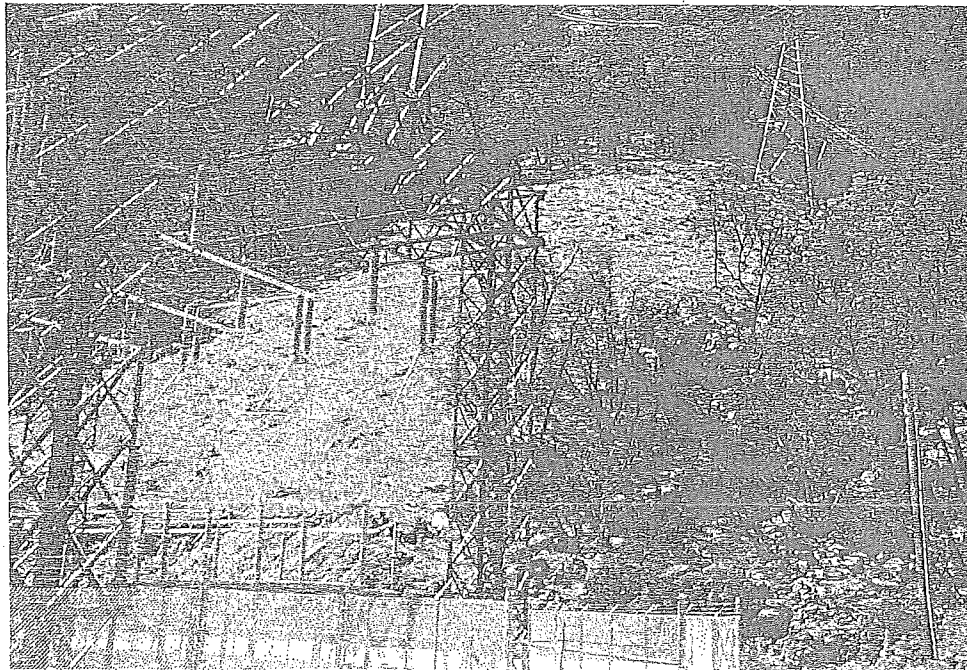


Figure 2-6: Work Area 2 - Steep Slope to the South of ISY Exhibiting Active Raveling Conditions (May 2, 2014)

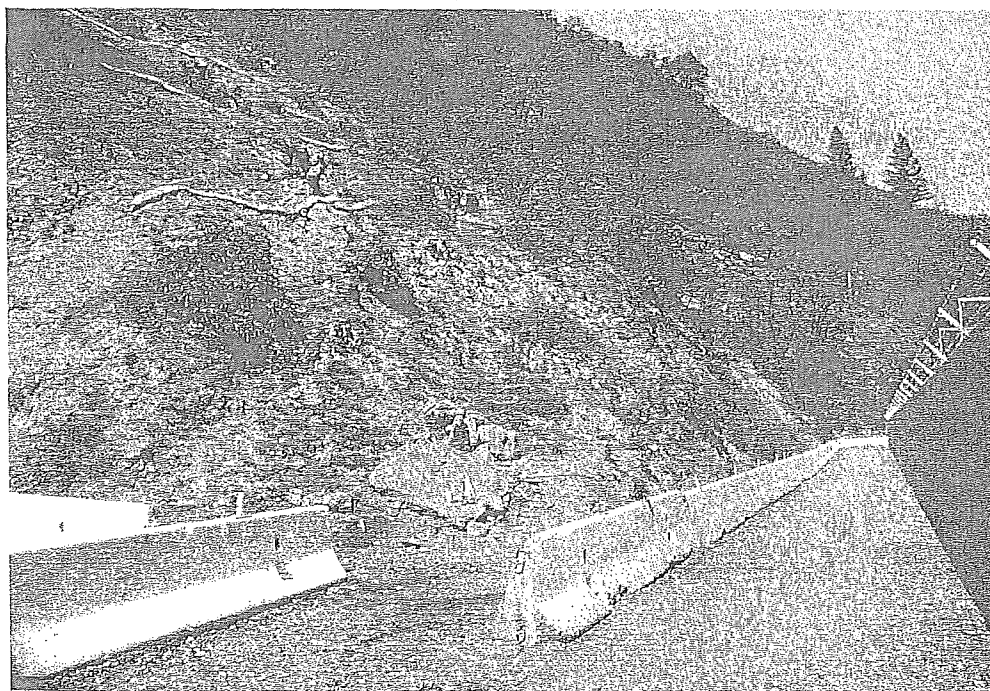


Figure 2-7: Slope Debris from Raveling Slope alongside Access Road on South Edge of ISY (May 2, 2014)

2.2 ISY Site – Summary of Risks

Based on the site visit performed on May 2, 2014 at ISY and the surrounding slopes, and consideration of hazards observed, Black & Veatch identified a number of risks ranging from minor to significant that include health and safety concerns, potential damage to ISY facilities and/or loss of HHWP operations. Such risks are summarized as follows.

- Work Area 1. Potentially-extensive slope failure at the east end of ISY, initiating localized and/or massive ground movement(s). This could, depending on the degree of severity, result in one or more of the following risks:
 - Unsafe working conditions.
 - Temporary blockage of ISY access road.
 - Permanent damage to ISY access road.
 - Damage to ISY perimeter security fencing.
 - Encroachment of ISY facility perimeter.
 - Damage to electrical equipment and support structures.
 - Damage to control building.
 - Switchyard loss of operation.
- Work Area 2. On-going, large-scale and extensive raveling of the steep slope located at the center of ISY, initiating rock falls of varying size (small rocks to large boulders) and velocity. This could, depending on the degree of severity, result in one or more of the following risks:
 - Unsafe working conditions.
 - Temporary blockage of ISY access road.
 - Permanent damage to ISY access road.
 - Damage to ISY perimeter security fencing.
 - Encroachment of ISY facility perimeter.
 - Damage to electrical equipment and support structures.
 - Switchyard loss of operation.

3.0 ALTERNATIVES FOR ISY SLOPE STABILIZATION PROJECT

This section discusses prospective hazard mitigation solutions and presents the identification and evaluation of alternatives for the Project.

3.1 Prospective Hazard Mitigation Solutions

To address the slope stability risk hazards observed in May 2014, six (6) hazard mitigation “solutions” along with a “no action” option were developed for use in the subsequent *Evaluation of Project Alternatives* step. One or more of the hazard mitigation solutions could be applied to each location / situation. The hazard mitigation solutions are presented in Table 3-1, “Hazard Mitigation Solutions.” Photos or illustrations of certain hazard mitigation solutions are presented in Figures 3-1 to Figure 3-4.

Table 3-1 Hazard Mitigation Solutions

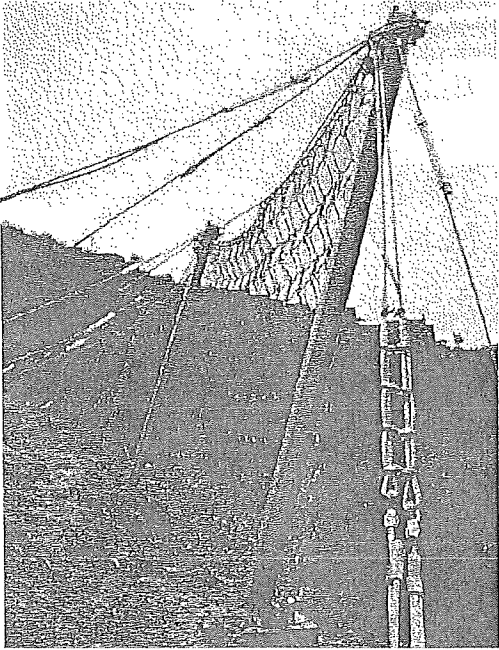
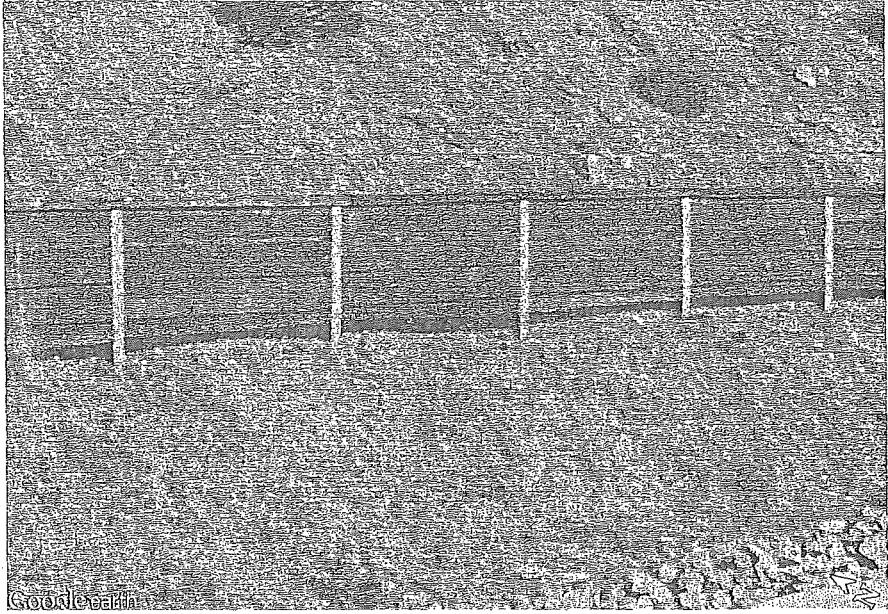
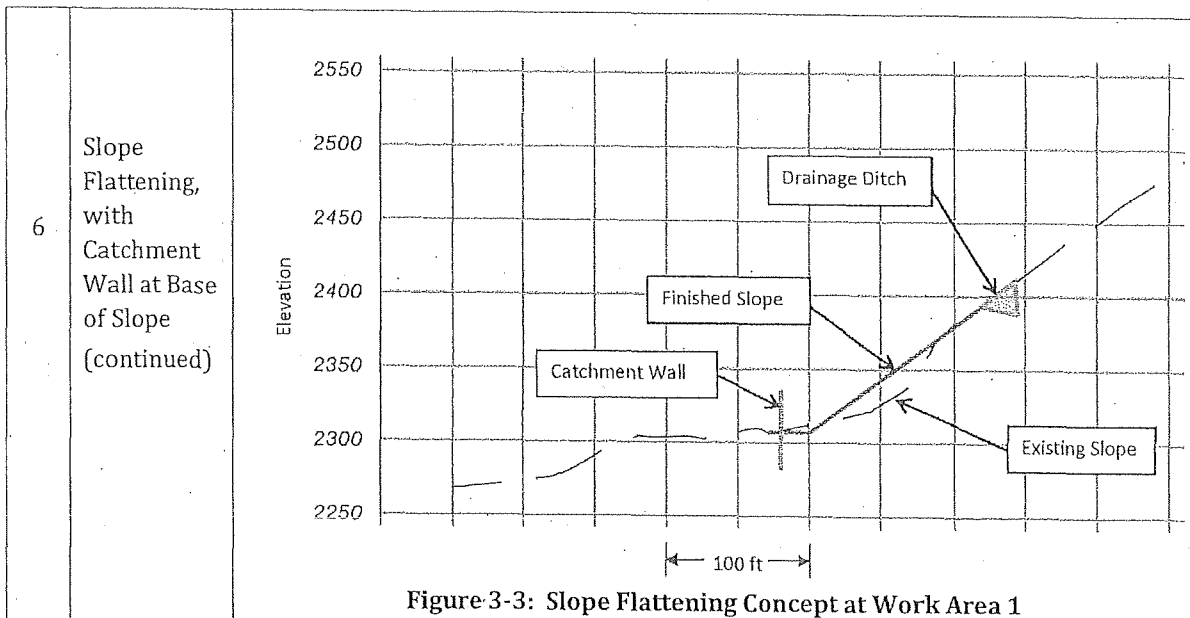
No.	Title	Mitigation Description
1	No Action	Leave conditions as they currently exist.
2	Catchment Fences Only	<p>As a sole mitigation, install a catchment fence along the base of the slope (at the edge of the access road) and additional rows of fences crossing the slope at locations upslope. Each fence would be between 8- to 12-feet tall and constructed using steel netting stretched between steel posts supported in drilled piers. The general concept is shown in Figure 3-1. Each catchment fence would be designed to stop the active down-the-slope movement of slope debris, but may require frequent debris removal to maintain its effectiveness. This solution is applicable to all work areas.</p> 

Figure 3-1: Typical Rock Catchment Fence

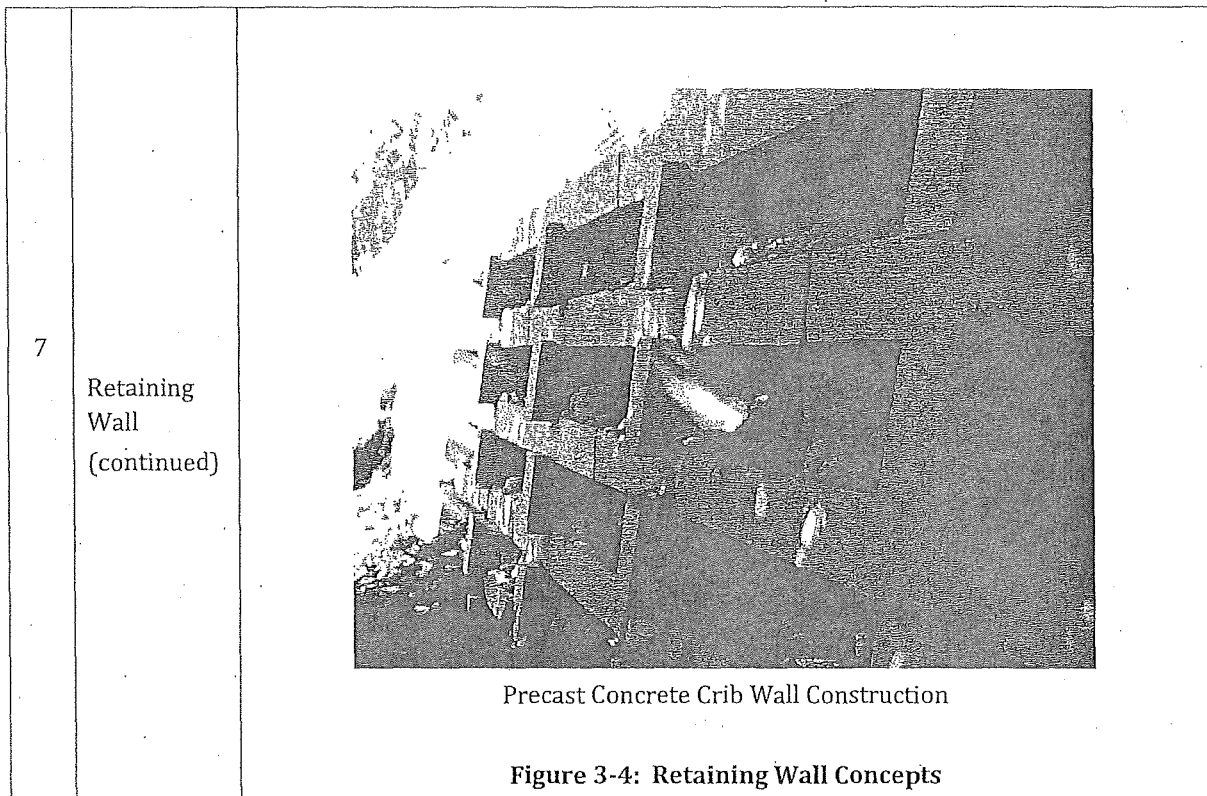
3	Catchment Wall	<p>As an alternative to a catchment fence, the catchment wall would be constructed along the base of the slope, along the edge of the access road. The catchment wall would be between 4- to 6-feet tall, and constructed using steel I-beam posts with heavy timber lagging. The general concept is shown in Figure 3-2. The catchment wall would be designed to stop the active down-the-slope movement of slope debris with the ability to store the material for longer periods without frequent cleanings; however, some amount of periodic maintenance / cleaning would still be necessary. This solution is applicable to all work areas.</p>  <p style="text-align: center;">Figure 3-2: Typical Catchment Wall</p>
4	Surface Water Diversion	<p>This mitigation involves the construction of concrete-lined diversion ditches to create surface water diversions on the steep slopes. This will mitigate the contribution of soil saturation to slope instability and to the active movement of slope debris. This solution is considered applicable to all project alternatives evaluated herein.</p>
5	Vegetative Surface Stabilization	<p>This mitigation involves the placement of hydroseed mixtures to promote stabilized soil surfaces by holding moisture and protecting soil surfaces against erosion from wind and rain. This solution is considered applicable to all project alternatives evaluated herein.</p>
6	Slope Flattening, with Catchment Wall at Base of Slope	<p>This mitigation solution involves the “laying back” of existing steep slopes to make them shallower and therefore more stable. This solution applies only to the conditions observed at Work Area 1. The average slope gradient would be reduced to roughly 1.5H:1V and a catchment wall would be installed at the base of slope. The general concept is shown below in Figure 3-3.</p>

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7	Retaining Wall	<p>As an alternative to slope flattening, this mitigation solution involves stabilizing the existing steep slopes by constructing a retaining wall. This solution applies only to the conditions observed at Work Area 1. The retaining wall would be of either soldier pile with lagging construction or be of precast concrete crib wall construction. The general concepts are shown below in Figure 3-4.</p> <p>Soldier Pile and Lagging Retaining Wall Construction</p>
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3.2 Identification of Project Alternatives

Given the above list of prospective hazard mitigation solutions, Black & Veatch performed a pre-screening of prospective hazard solutions as a way of developing project alternatives that appear suitable for further evaluation for each work area. The results of the pre-screening exercise are presented in Table 3-2 below.

Table 3-2 Development of Project Alternatives

Mitigation Solution		Work Area 1 Mitigation ²	Work Area 2 Mitigation ³
1	No Action	Not considered ¹	
2	Catchment Fences (Only)	Alternative 1A	Alternative 2A
3	Catchment Wall (Only)	Alternative 1B	Alternative 2B
4	Surface Water Diversion	Included	Included
5	Vegetative Surface Stabilization	Included	Included
6	Slope Flattening with Catchment Wall	Alternative 1C	Not considered
7	Retaining Wall	Alternative 1D	Not considered

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The project alternatives development resulted in four (4) alternatives for Work Area 1 and two (2) alternatives for Work Area 2. Commenting on the above screening of alternatives:

- ¹ The No Action alternative does not meet the objective of mitigating the risk of slope hazards and therefore was not considered further.
- ² Work Area 1 options include solutions that would provide similar degrees of hazard reduction / protection, but would have different construction and maintenance costs. These four solutions were compared at a high level, on the basis of their hazard reduction effectiveness, relative construction cost, and relative maintenance cost, as described more fully below.
- ³ Work Area 2 options include solutions that would provide similar degrees of hazard reduction / protection, but would have different construction and maintenance costs. These two solutions were compared at a high level, on the basis of their hazard reduction effectiveness, relative construction cost, and relative maintenance cost, as described more fully below.

3.3 Evaluation of Work Area 1 Alternatives

Alternative 1A – Catchment Fences

This alternative consists of the construction of two catchment fences; one at the base of the slope just south of the ISY access road, and one approximately 80 feet higher, above the scarp left by previous slope failures. Each fence would be approximately 400 feet long and 8 feet in height. The fences would serve to catch falling debris that reduces the risk of blocking the access road or damaging the ISY fence or equipment. Periodic maintenance would be required to clear fallen debris from behind the fences and to repair the fences after rock falls. If the over-steepened slope continues to degrade, the upper fence could suffer severe damage and require replacement.

Alternative 1B – Catchment Wall

This alternative consists of the construction of an approximately 8-foot high debris catchment wall at the base of the slope. The approximately 100-foot long wall would be built of vertical steel I-beams set into cast-in-place drilled concrete piers with heavy timber lagging between the I-beams. The wall would serve to catch falling debris that reduces the risk of blocking the access road or damaging the ISY fence or equipment. Periodic maintenance would be required to clear fallen debris from behind the wall and to repair the wall if it becomes damaged. This alternative should cost less to install than Alternative 1A because the construction would take place at the base of the slope only.

Alternative 1C – Slope Flattening with Catchment Wall

This alternative uses the catchment wall described in Alternative 1B in combination with area grading of the existing over-steepened slope to an approximate average slope of 1.5 : 1 (horizontal : vertical). The grading activity will serve to remove loose materials and clean-up the slope making it less likely to produce falling debris materials, even though such debris will collect behind the catchment wall. This alternative will cost more to construct than Alternative 1B, but would offer a higher degree of protection and lower maintenance costs.



Alternative 1D – Retaining Wall

This alternative involves the construction of a structurally-sound retaining wall at the base of the slope that will stabilize the slope and prevent future movement, thus reducing the risk of blocking the access road or damaging the ISY fence or equipment. The retaining wall would be at least 50-foot tall and approximately 100 feet long. This alternative offers the highest degree of protection, but would be the most costly of the alternatives to construct.

The four alternatives for Work Area 1 were then compared in the following table. All four of the alternatives would include surface water diversions constructed uphill of the work area and the application of hydroseeded vegetative cover.

Table 3-3 Evaluation of Alternatives for Work Area 1

Alternative	Hazard Reduction Effectiveness	Relative Construction Cost	Relative Maintenance Cost
1A - Catchment Fences	Moderate	Moderate	Highest
1B - Catchment Wall	Moderate	Lowest	Moderate
1C - Slope Flattening with Catchment Wall	High	Moderate	Moderate
1D - Retaining Wall	Highest	Highest	Lowest

Preferred Alternative

On the basis of the relative comparison of hazard reduction and cost factors, Alternative 1C appears to offer the best-valued solution for Work Area 1 since it would provide a relatively “high” degree of hazard protection for the ISY facility at a relatively “moderate” construction and maintenance cost.

3.4 Evaluation of Work Area 2 Alternatives

Alternative 2A – Catchment Fences

This alternative consists of the construction of two catchment fences; one at the base of the slope just south of the ISY access road, and one more approximately 120 feet higher. Each fence would be approximately 400 feet long and 8 feet in height. The fences would serve to catch falling debris that reduces the risk of blocking the access road or damaging the ISY fence or equipment. Periodic maintenance would be required to clear fallen debris from behind the fences and to repair the fences after rock falls.

Alternative 2B – Catchment Wall

This alternative consists of the construction of an approximately 10-foot high debris catchment wall at the base of the slope. The approximately 400-foot long wall would be built of vertical steel I-beams set into cast-in-place drilled concrete piers with heavy timber lagging between the I-beams. The wall would serve to catch falling debris that reduces the risk of blocking the access road or damaging the ISY fence or equipment. Periodic maintenance would be required to clear fallen



debris from behind the wall and to repair the wall if it becomes damaged. A risk would still exist that falling debris could travel over the top of the wall and into the ISY facility. This alternative should cost less to install than Alternative 2A because the construction would take place at the base of the slope only.

The two alternatives for Work Area 2 were then compared in the following table. Both of the alternatives would include surface water diversions constructed uphill of the work area and the application of hydroseeded vegetative cover.

Table 3-4 Evaluation of Alternatives for Work Area 2

Alternative	Hazard Reduction Effectiveness	Relative Construction Cost	Relative Maintenance Cost
2A - Catchment Fences	Higher	Moderate	Moderate
2B - Catchment Wall	Lower	Lower	Lower

Preferred Alternative

On the basis of the relative comparison of hazard reduction and cost factors, Alternative 2A appears to offer the best-valued solution for Work Area 2 since it would provide a relatively “higher” degree of hazard protection for the ISY facility at a relatively “moderate” construction and maintenance cost.

3.5 Selection of Preferred Project Alternative

Based on the above comparison of alternatives for the two work areas, the following mitigation project configuration is hereby proposed for further development in Section 4.0 below, as follows:

Table 3-5 Preferred Project Alternative

Mitigation Solution	Work Area 1 Mitigation	Work Area 2 Mitigation
2 Catchment Fences		√
4 Surface Water Diversion	√	√
5 Vegetative Surface Stabilization	√	√
6 Slope Flattening with Catchment Wall	√	

4.0 DEVELOPMENT OF PROPOSED PROJECT

This section summarizes the development of the proposed project that includes the following key components of construction work: 1) Slope Flattening at Work Area 1; 2) Catchment Wall at Work Area 1; 3) Catchment Fences at Work Area 2; 4) Surface Water Diversions; and 5) Vegetative Surface Stabilization.

4.1 Project Description / Scope of Work

The ISY Slope Stabilization Project is therefore described by the following conceptual-engineering scope of work, as shown in Figure 4-1, “ISY Slope Stabilization Project Concept”.

- Site Mobilization.
- Perform Slope Flattening at Work Area 1:
 - Grade over-steepened slope to an approximate uniform 1.5:1 (H:V) slope.
- Install 100-foot long Catchment Wall at Work Area 1:
 - At base of slope, drill thirteen (13) vertical pier holes approximately 24-inch diameter, 8 feet deep at 8-foot spacing.
 - Install 16-foot long steel I-Beams in drilled pier holes with reinforcing steel bar cage.
 - Fill pier holes with concrete securing I-Beams in place.
 - Install 8-foot long heavy timber lagging (6" x 8" timbers, or larger) between I-Beams to a height of 8 feet.
- Construct Catchment Fences at Work Area 2:
 - At the base of slope, and at one higher elevation on the slope above, drill approximately 80 pier holes at 10-foot spacing, 8-feet deep, to support fence posts.
 - Install 16-foot long steel fence posts in drilled pier holes.
 - Install steel netting on poles.
 - Drill 80 anchor holes and install anchors and cable tiebacks.
- Install Surface Water Diversion System:
 - At the approximate locations shown in Figure 4-1, install approximately 2000 linear feet of shallow V-ditches, either concrete-lined or lined with an erosion-resistant concrete revetment block system, on the slope to divert surface drainage laterally away from both work areas and towards existing drainages to the west and east of the work areas.
- Apply Vegetative Surface Stabilization:
 - Apply approved hydromulch (or hydroseed mixture if acceptable) to approximately 5 acres of disturbed areas of both work area sites to aid in the establishment of vegetative cover.
- Site Demobilization.



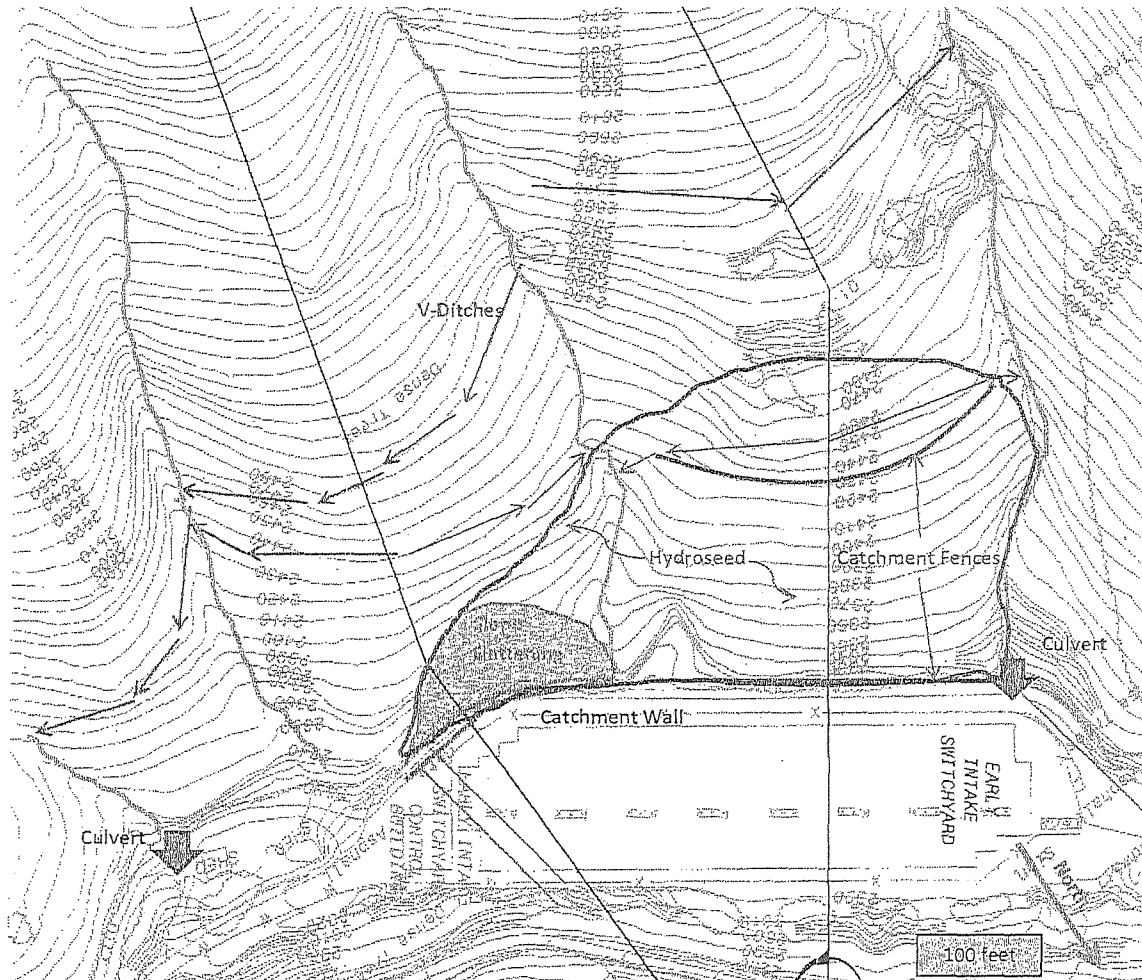


Figure 4-1: ISY Slope Stabilization Project Concept



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Conceptual design drawings were prepared by Black & Veatch to further describe the engineering concepts and planned construction details associated with the proposed project. The project drawings are included in this report as Attachment A – Project Drawings. The attached drawings are printed as tabloid 11" x 17" size. In addition, full-sized 22" x 34" drawings in PDF file format are available to be submitted with the grant sub-application.

4.2 Project Design & Construction Schedule

Black & Veatch prepared a proposed design and construction schedule for implementing the Project which is presented in Attachment B, "Project Schedule." As shown, the Project is estimated to take approximately 24 months to complete following the City's receipt of a Hazard Mitigation Grant Award. Ideally, the award would take place in the fall of 2014 which will allow for the design and construction bidding phases to be completed in 2015, and for construction to be completed in 2016. All Project work is expected to be completed on or before the end of 2016.

4.3 Project Cost Estimate

Estimated costs of construction for the ISY Slope Stabilization Project were prepared by Black & Veatch in accordance with the procedures and guidelines of the *Cost Estimate Classification System* published by the Association for the Advancement of Cost Estimating International (AACEI). For purposes of this report, the estimated cost of construction is an AACEI Class 4 estimate which is generally prepared based on limited information and subsequently has fairly wide accuracy ranges as shown in Table 4-1. Class 4 estimates are prepared for a number of purposes such as, but not limited to, detailed strategic planning, business development, project screening, alternatives scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.

Table 4-1 Definition of AACEI Class 4 Estimated Costs for Construction

Estimate Class	4
Completion Level of Project Definition Documents	1% to 15%
End Usage (Typical Purpose)	Study or Feasibility
Expected Accuracy Range (low and high)	L: -15% to -30% H: +20% to +50%
Design Contingency	15% to 20%

Table 4-2 shows how the overall estimated project cost is assembled when adding the estimated costs of construction as defined above to the estimates of cost amounts designated for other SFPUC project phases.



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Table 4-2 Cost Elements by SFPUC Project Phase

Cost Elements by SFPUC Phase		Overview of Cost Estimating Approach
A	Assessment / Engr'g Support for HMGP Sub-Application	Based on value of B&V Task Order 15 for CS-340E
B	Design, Permitting & Environmental Documentation	Taken as 13% of Estimated Construction Cost, plus manhour estimates for environment coordination
C	Construction Management	Taken as 10% of Estimated Construction Cost
D	Construction	Estimated per AACEI Class 4 Method
E	Project Closeout	Estimated Based on Requirements of SFPUC Infrastructure Division Procedures Manual PM3.14
F	City Administration	10% of Subtotal for Rows A – E (above)
G	Project Contingency	10% of Subtotal for Rows A – F (above)
Total Project Estimate		Total of Rows A – G (above)

The total project cost is estimated to be \$1,630,000. A copy of the detailed AACEI Class 4 project cost estimate prepared by Black & Veatch is included as Attachment C – Estimated Project Cost. Table 4-3 provides a summary of the estimated project cost by cost element, and indicates which cost element is eligible to be requested for reimbursement as part of the hazard mitigation grant.

Table 4-3 Estimated Project Costs

Cost Elements by SFPUC Phase		Estimated Cost (\$1,000s)
A	Assessment / Engr'g Support *	\$54
B	Design, Permitting & Environ. Documentation*	\$165
C	Construction Management *	\$99
D	Construction *	\$993
Subtotal Grant-Eligible Project Costs		\$1,311
E	Project Closeout	\$36
F	City Administration	\$135
G	Project Contingency	\$148
Subtotal Non-Eligible Project Costs		\$319
Total Project Estimate		\$1,630

* Cost element is eligible for reimbursement under hazard mitigation grant.



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4.4 Annual Maintenance Requirements

Implementing the project will **increase** the average annual maintenance cost. The expected annual maintenance requirements associated with each work area were calculated and made a part of the Benefit-Cost Analysis discussed further in Section 4.6 below. The estimated annual maintenance costs are as follows:

- Work Area 1 – Catchment Wall: On an average annual basis, HHWP maintenance crews would be assigned to clean out debris that has collected behind the catchment wall, and to repair any damage to the wall, as it occurs.
 - Labor = 2 Crew Days (at \$4,000/day)
 - Equipment = Backhoe with Operator – 2 Days (at \$1,400/day)
 - Equipment = Haul Trucks – 2 Days (at \$800/day)
 - Material Allowance = \$1,500
- Work Area 2 – Catchment Fences: On an average annual basis, HHWP maintenance crews would be assigned to remove debris that has collected behind the catchment fences, and to repair any damage to the fences, as it occurs.
 - Labor = 2 Crew Days (at \$4,000/day)
 - Material Allowance = \$1,500
- All Areas – Drainage System: On an average annual basis, HHWP maintenance crews would be assigned to inspect and clean out the V-ditch drainage channels and culverts and perform minor repairs resulting from any damage, as it occurs.
 - Labor = 3 Crew Days (at \$4,000/day)

The estimated annual maintenance budget is tabulated on Table 4-4.

Table 4-4 Estimated Annual Maintenance Budget

Maintenance Activity	Labor / Crew	Equipment	Materials	Subtotals
Work Area 1 Wall	\$8,000	\$4,400	\$1,500	\$13,900
Work Area 2 Fence	\$8,000	Incl'd Above	\$1,500	\$9,500
Drainage System	\$12,000	\$0	\$0	\$12,000
Total Annual Maintenance Budget				\$35,400



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4.5 SFPUC Cost to Replace Lost Generation During ISY Outage

Seventy-five percent (75%) of the HHWP Project annual generation is transmitted through Early Intake Switchyard. This power generation provides 100 percent of the electricity to power San Francisco's municipal buildings, including the airport; a failure of any critical component within the switchyard represents a significant loss of power generation and transmission capability. During planned and unplanned outages of ISY, the City purchases energy on the open power market to make up for the loss.

One of the significant benefits of the ISY Slope Stabilization Project will be to reduce the hazards that could damage the switchyard and its equipment, reducing the City's requirement to purchase replacement energy. The Benefit-Cost Analysis accounts for this benefit by calculating the cost of replacement energy in terms of "outage-days," where an outage-day represents a 24-hour period during which ISY is out of service.

For purposes of this report, the outage-day energy replacement cost is estimated to be \$135,000. This value is based on information developed by HHWP and conveyed to Black & Veatch by email dated May 29, 2014. A post processing model was used to evaluate the impact of losing ISY. The criteria included:

- Current electrical demand.
- No PG&E deferred bank.
- Evaluates all water years 1921-2002.
- May 5, 2014 TFS forward prices.
- Compute net revenues for two scenarios (purchases for muni/apt/n, Districts Class 1 and excess, Third Party sales).
 - Base: Assume all hydro units in operation.
 - Loss of ISY: No generation at Kirkwood PH or Holm PH.
 - Impact in net revenues: Average loss is \$49 million
 - On average, the impact is \$135,000 per day.

4.6 Benefit-Cost Effectiveness

FEMA and Cal OES require that applicants and sub-applicants use FEMA-approved methodologies and software to demonstrate the cost-effectiveness of their proposed projects. FEMA has developed the Benefit-Cost Analysis (BCA) software to facilitate the process of preparing a BCA. For purposes of the City's mitigation grant application, Black & Veatch has utilized Benefit-Cost Analysis Version 4.8 for determining the Benefit/Cost Ratio (BCR) for the Project. Projects with a BCR of less than 1.0 will not be considered.

There are two basic groups of information required for completing the BCA – project cost and project benefit.



4.6.1 Project Cost

The project cost is taken as eligible components of the total project cost plus the increased cost of annual maintenance resulting from implementing the project. Values are provided in current day (May 2014) costs. The BCA software calculates the present worth Project Cost based on this information. For this project, the Project Cost is computed from the following values:

- Grant-Eligible Project Costs (Table 4-3): \$1,311,000
- Increased Annual Maintenance Costs: \$35,400

4.6.2 Project Benefit

The project benefit is taken as the City's cost to recover from damage caused by the existing hazards prior to mitigation, less the cost to recover from damage caused by hazards remaining after mitigation – the net benefit.

To estimate the values of “before mitigation” and “after mitigation” damage, and applying engineering judgment to assess the risks that were summarized in Section 2.0, Black & Veatch developed a series of damage scenarios based on the type and magnitude of historical slope hazard events at ISY as described and documented by SFPUC. Each damage scenario includes an estimated construction cost needed to respond. In addition, to satisfy the data input requirements of the BCA, it was necessary to estimate the recurrence interval of the risks and damage scenarios so that BCA could calculate the present worth of recurring damage, before and after mitigation.

For purposes of this report, the damage scenarios and resulting construction costs were estimated to be as indicated in Table 4-5; detailed cost estimates are presented in the damage calculations that are included as Attachment D, and damage scenarios are summarized below:

Table 4-5 Summary of Damage Scenarios and Estimated Construction Costs

Damage Scenario	Estimated Construction Cost to Repair	ISY Outage-Days	Recurrence Interval – Before Mitigation	Recurrence Interval – After Mitigation
ISY Temporary Access Road Blockage	\$47,000	0	10 years	25 years
Damage to ISY Access Road	\$28,000	0	10 years	25 years
Damage to ISY Perimeter Fencing	\$30,000	2	10 years	25 years
Debris Encroaches ISY Yard	\$31,000	2	10 years	n/a
Damage to ISY Electrical Equipment and Structures	2,150,000	20	25 years	n/a
Damage to ISY Control Building	\$328,000			

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- ISY Temporary Access Road Blockage: The over-steepened slope at the east end of ISY site has experienced a slide, blocking the access road temporarily; a contractor crew hired by the City is dispatched to the site to remove the slope debris and to re-open access road. This is assumed to be a three day cleanup project. Dispose of debris materials locally. No damage caused to access road pavement. ISY remains in operation (Outage-Days = 0).
- Damage to ISY Access Road: The ISY access road pavement was damaged by slope movement. It is assumed that pavement replacement is required for a 100-foot long length of the entire access road width of 15 feet = 1500 sq. ft. A contractor crew hired by the City is dispatched to the site to repair the road. This is assumed to be a two day project. Dispose of debris materials locally. ISY remains in operation (Outage-Days = 0).
- Damage to ISY Perimeter Fencing: The slope movement or large rockfalls damage the ISY fencing. It is assumed that fence replacement is required for a 200-foot long length of fence. A contractor crew hired by the City is dispatched to the site to repair the fence. This is assumed to be a two day project. For safety reasons, ISY is taken out of operation during the construction activity (Outage-Days = 2).
- Debris Encroaches ISY Yard: The slope movement or large rockfalls encroach the ISY yard - representing major slide or rockfall. A contractor crew hired by the City is dispatched to the site to cleanup the yard during repair of the fence. This is assumed to be an additional two day project. For safety reasons, ISY is taken out of operation during this construction activity (Outage-Days = 2 additional).
- Damage to ISY Electrical Equipment and Structures: A major slope failure or significant rockfall event occurs, encroaching ISY yard and damaging one bay of switchyard equipment. In response, the City performs temporary re-configuring of the electrical bus system (a shoo-fly) which is assumed to take 20 days. The switchyard is placed back in operation until the damaged equipment is replaced on an emergency basis, which takes 12 months to perform. It is assumed that the project involves: replacement of 1 - 230kV circuit breaker; 3 - 230kV disconnect switches; and supporting structures. (Outage-Days = 20).
- Damage to ISY Control Building: The same slope hazard that damaged the ISY equipment also damages the control building. The control building repair is assumed to be exterior, structural only and is completed in parallel with the equipment replacement. The same 20-day outage described above applies to this damage scenario as well.

4.6.3 Project Useful Life

The project useful life is the estimated amount of time (in years) that the mitigation action will be effective. The Project Useful Life Summary Table located in the BCA software provides Standard Values and acceptable useful life limits for a variety of mitigation projects. For this project, the project useful life is selected to be 30 years, as the expected longevity of these facilities that are composed of wood, steel and fencing materials. This is similar to what would be the expected useful life of buildings.



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4.6.4 Project Benefit/Cost Ratio

A copy of the BCA Summary Report is included as Attachment E. As shown, the BCR for the project is calculated to be 2.08.

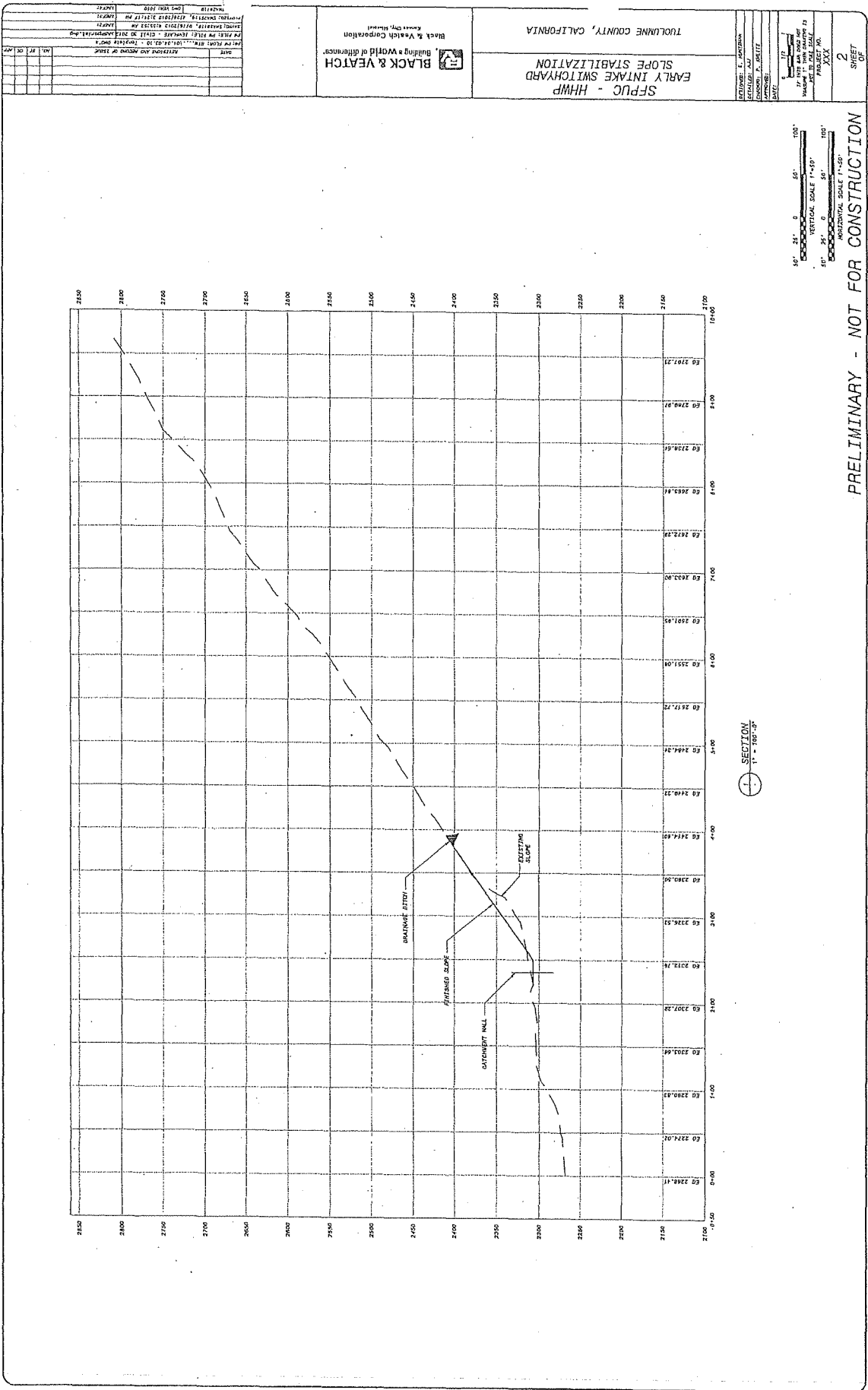


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ATTACHMENT A Project Drawings



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ATTACHMENT B Project Schedule

5/21/14

San Francisco Public Utilities Commission Early Intake Switchyard Slope Stabilization Project Schedule for Design & Construction

ID	Task Name	Duration	Start	Finish	2015	2016	2017
1	Hazard Mitigation Grant Program Administration	156 d	4/25/14	11/28/14			
2	SFPUC Subapplication Development	24 d	4/25/14	5/28/14			
3	SFPUC Subapplication Submission; Review by Cal OES/FEMA	110 d	5/29/14	10/29/14			
4	Hazard Mitigation Grant Award (Assumed Timeframe)	0 d	10/29/14	10/29/14			
5	City NTP for Project Implementation	0 d	11/28/14	11/28/14			
6	Project Design Phase	242 d	12/1/14	11/3/15			
7	Prepare and Approve Basis of Design Report	44 d	12/1/14	1/29/15			
8	Prepare and Approve 50% Design Package	44 d	1/30/15	4/1/15			
9	Prepare and Approve 95% Design Package	44 d	4/2/15	6/2/15			
10	Prepare and Approve 100% Design Submittal	44 d	6/3/15	8/3/15			
11	Prepare Front-End Contract Documents	44 d	8/4/15	10/2/15			
12	Final Contract Document Reviews and Approvals	22 d	10/5/15	11/3/15			
13	Contract Documents Completed - Project Ready to Bid	0 d	11/3/15	11/3/15			
14	Project Bid and Award Phase	66 d	11/4/15	2/3/16			
15	Bid Phase	22 d	11/4/15	12/3/15			
16	Award Phase	44 d	12/4/15	2/3/16			
17	Construction Contractor NTP	0 d	2/3/16	2/3/16			
18	Project Construction Phase	191 d	2/4/16	9/1/16			
19	Contractor Mobilization	64 d	2/4/16	5/3/16			
20	Office Mobilization	20 d	2/4/16	3/2/16			
21	Submittals and Approvals	44 d	3/3/16	5/3/16			
22	Site Construction	87 d	5/4/16	9/1/16			
23	Perform Site Mobilization & Install SWPPP Features	22 d	5/4/16	6/2/16			
24	Work Area 1 Construction:	65 d	6/3/16	9/1/16			
25	Perform Area Grading to Flatten Slope	20 d	6/3/16	6/30/16			
26	Construct Catchment Wall at Base of Slope	20 d	7/1/16	7/28/16			
27	Install Drainage System	20 d	7/1/16	7/28/16			
28	Apply Vegetative Surface Stabilization	15 d	7/29/16	8/18/16			
29	Work Area 1 Cleanup and Completion	10 d	8/19/16	9/1/16			
30	Work Area 2 Construction:	65 d	6/3/16	9/1/16			
31	Install Catchment Fences Upslope	20 d	6/3/16	6/30/16			
32	Construct Catchment Fence at Base of Slope	20 d	7/1/16	7/28/16			
33	Install Drainage System	20 d	7/1/16	7/28/16			
34	Apply Vegetative Surface Stabilization	15 d	7/29/16	8/18/16			
35	Work Area 2 Cleanup and Completion	10 d	8/19/16	9/1/16			
36	Construction Substantial Completion	0 d	9/1/16	9/1/16			
37	Post Construction Phase	75 d	9/2/16	12/15/16			
38	Contractor Demobilization	15 d	9/2/16	9/22/16			
39	Preparation of As-Built Drawings	22 d	9/23/16	10/24/16			
40	SFPUC Administrative Closeout	60 d	9/23/16	12/15/16			

Date: 5/21/14

Critical Task

Noncritical Task

Noncritical Task Progress

Critical Task Progress

Milestone

Summary

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BLACK & VEATCH CORPORATION

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SFPUC Hetch Hetchy Water & Power (HHWP)

RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

ATTACHMENT C Estimated Project Cost

	San Francisco Water Power Sewer <small>Services of the San Francisco Public Utilities Commission</small>	CLASS 4 COST ESTIMATE SUMMARY					BLACK & VEATCH Building a world of difference.
Project Description Name: Early Intake Switchyard Slope Stabilization Project							
Finance Reference: not applicable							
Line Item Number	Description	Unit	Unit Price	Quantity	Sub Total		
A - ASSESSMENT & ENGINEERING SUPPORT FOR HAZARD GRANT APPLICATION (Pre-Award Costs) *							
1	CS-340E Task Order 15 Scope of Services	LS	\$54,327	1	\$54,327		
Assessment & Engr'g Support for Application Total					\$54,327		
B - DESIGN, PERMITTING & ENVIRONMENTAL DOCUMENTATION *							
2	Final Design / Contract Documents (10%)	%	\$993,259	10%	\$99,326		
3a	Historical and Biological/Water Quality Work by SFPUC	MHs	\$150	120	\$18,000		
3b	Environmental Coordination with USFS and Cal-OES	MHs	\$150	120	\$18,000		
3c	Permitting (3%)	%	\$993,259	3%	\$29,798		
Design Total					\$165,124		
C - CONSTRUCTION MANAGEMENT *							
4	Construction Management (10%)	%	\$993,259	10%	\$99,326		
Construction Management Total					\$99,326		
D - CONSTRUCTION (Refer to Cost Backup on Pages 2 & 3) *							
5	Slope Flattening & Catchment Wall at Work Area 1	LS	\$282,808	1	\$282,808		
6	Catchment Fences at Work Area 2	LS	\$401,436	1	\$401,436		
7	Surface Water Diversion System	LS	\$280,665	1	\$280,665		
8	Vegetative Surface Stabilization	LS	\$28,350	1	\$28,350		
9			\$0	0	\$0		
10			\$0	0%	\$0		
Construction Total					\$993,259		
E - PROJECT CLOSEOUT **							
11	SFPUC Project Closeout Costs	HR	\$180	200	\$36,000		
Project Close Out Total					\$36,000		
F - CITY ADMINISTRATION **							
12	10% of Project Subtotal (A-E)	%	\$1,348,036	0.10	\$134,804		
City Administration Total					\$134,804		
G - PROJECT CONTINGENCY **							
13	10% of Project Subtotal (A-F)	%	\$1,482,839	0.10	\$148,284		
Contingency Total					\$148,284		
TOTAL ESTIMATE					\$1,631,123		

* - This cost is eligible to be included in the mitigation grant project cost estimate worksheet.

** - This is a City cost that is not eligible to be included in the mitigation grant project cost estimate worksheet.

ESTIMATED PROJECT COST - BACKUP INFORMATION

	Unit	Qty	Unit Cost	Subtotal	Total
5 Slope Flattening & Catchment Wall at Work Area 1					\$ 282,808
Slope Grading - Cost by Earthwork Crew Day	Crew-Day	10	\$17,334	\$173,340	
Catchment Wall (100 ft long; 8 ft high):					
Excavate Foundations (13, drilled 24" x 96")	EA	13	\$972	\$12,636	
Concrete Foundations (13, 1 CY each)	CY	13	\$810	\$10,530	
Furnish & Install H-Piles (13, 40 plf)	LB	8320	\$5	\$40,435	
Install Timber Lagging (800 sq. ft., 6" x 8")	SF	800	\$41	\$32,400	
Mobilization & Demobilization (5%)	%	5%	\$269,341	\$13,467	
6 Catchment Fences at Work Area 2					\$ 401,436
Catchment Fences at Work Area 2 (800 ft long; 8 ft high):					
Excavate Foundations (80, drilled piers)	EA	80	\$972	\$77,760	
Concrete Foundations (80)	CY	80	\$1,215	\$97,200	
Furnish & Install Fence Posts (80)	EA	80	\$324	\$25,920	
Furnish & Install Fencing (6,400 sq. ft.)	SF	6400	\$16	\$103,680	
Tie-Backs (80)	EA	80	\$972	\$77,760	
Mobilization & Demobilization (5%)	%	5%	\$382,320	\$19,116	
7 Surface Water Diversion System					\$ 280,665
V-Ditch Construction (2000 LF):					
Ditch Excavation (Unit Price Item 2)	FT	2000	\$23	\$45,036	
Concrete-Lining for Ditch (Unit Price Item 3)	FT	2000	\$111	\$222,264	
		0	\$0	\$0	
Mobilization & Demobilization (5%)	%	5%	\$267,300	\$13,365	
8 Vegetative Surface Stabilization					\$ 28,350
Hydroseeding Operations (Acres)	Acre	5	\$5,400	\$27,000	
		0	\$0	\$0	
Mobilization & Demobilization (5%)	%	5%	\$27,000	\$1,350	

Additional Calculations

EARTHWORK CREW-DAY UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$ 972
Safety Officer	\$ / Day	0.5	\$972	\$ 486
General Laborers (5)	\$ / Day - Ea	5	\$583	\$ 2,916
Front-End Loader with Operator (2)	\$ / Day - Ea	2	\$2,268	\$ 4,536
Backhoe with Operator (1)	\$ / Day - Ea	1	\$2,268	\$ 2,268
Haul Trucks (3)	\$ / Day - Ea	3	\$1,296	\$ 3,888
Compactor with Operator (1)	\$ / Day - Ea	1	\$2,268	\$ 2,268
Total Crew-Day Unit Cost				\$ 17,334

V-DITCH EXCAVATION UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$ 972
General Laborers (6)	\$ / Day - Ea	6	\$583	\$ 3,499
Backhoe with Operator (1)	\$ / Day - Ea	1	\$2,268	\$ 2,268
Compactor with Operator (1)	\$ / Day - Ea	1	\$2,268	\$ 2,268
Total Crew-Day Unit Cost		0	\$ -	\$ 9,007
Daily Excavation Production Rate	Ft/Day			400
V-Ditch Excavation Unit Cost	\$/Ft			\$ 23

V-DITCH LINING UNIT COST	Unit	Qty	Unit Cost	Subtotal
Crew Foreman	\$ / Day	1	\$972	\$ 972
General Laborers (6)	\$ / Day - Ea	6	\$583	\$ 3,499
Concrete Pumper Truck with Operator	\$ / Day - Ea	1	\$3,240	\$ 3,240
Concrete Material & WWF	CY	6	\$567	\$ 3,402
Total Crew-Day Unit Cost		0	\$ -	\$ 11,113
Daily Lining Production Rate	Ft/Day			100
V-Ditch Lining Unit Cost	\$/Ft			\$ 111

SFPUC Hetch Hetchy Water & Power (HHWP)

RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

ATTACHMENT D Estimate of Avoided Damages



ISY Slope Stabilization Project - Expected Cost to Respond to Damage Caused by ISY Slope Hazards

For purposes of the grant sub-application, these are considered to be the "benefits" of the mitigation project.

Costs are calculated for 2014 cost basis; the BCA software accounts for present worth evaluation of the values

Item	Description	Cost	Frequency (Recurrence Interval)	
			Before Mitigation	After Mitigation
1	Clean-Up Temporary Blockage of ISY Access Road	\$ 46,611	10 years	25 years
2	Repair Damage to Access Road	\$ 28,268	10 years	25 years
3	Repair Damage to ISY Perimeter Fencing	\$ 30,392	10 years	25 years
4	Cleanup Debris Encroaching ISY Yard	\$ 31,074	10 years	not expected
5	Address Damage to Electrical Equipment & Structures	\$ 2,150,793	25 Years	not expected
6	Address Damage to Control Building	\$ 328,355	25 Years	not expected

SFPUC Cost to Replace Lost Generation During ISY Outage (per day), \$ 135,000

Damage

Scenario	Unit	Qty	Unit Cost	Subtotal	Total
1 Clean-Up Temporary Blockage of ISY Access Road					\$ 46,611
The over-steepened slope at the east end of ISY site has experienced a slide, blocking the access road temporarily; a contractor crew hired by the City is dispatched to the site to remove the slope debris and to re-open access road. This is assumed to be a three day cleanup project. Dispose of debris materials locally. No damage caused to access road pavement. ISY remains in operation (Outage-Days = 0).					
Clean-up Cost (Earthwork Cleanup Crew)	Crew-Day	3	\$12,797	\$38,391	
Mobilization & Demobilization (5%)	%	5%	\$38,391	\$1,920	
HHWP PM/CM Support - Minor Project	Day	3	\$2,100	\$6,300	
2 Repair Damage to Access Road					\$ 28,268
The ISY access road pavement was damaged by slope movement. It is assumed that pavement replacement is required for a 100-foot long length of the entire access road width of 15 feet = 1500 sq. ft. A contractor crew hired by the City is dispatched to the site to repair the road. This is assumed to be a two day project. Dispose of debris materials locally. ISY remains in operation (Outage-Days = 0).					
Remove Damaged Pavement (Earthwork Crew)	Crew-Day	1	\$12,797	\$12,797	
Place New Asphalt Pavement (Paving Crew & Materials)	SF	1500	\$7	\$10,125	
Mobilization & Demobilization (5%)	%	5%	\$22,922	\$1,146	
HHWP PM/CM Support - Minor Project	Day	2	\$2,100	\$4,200	
3 Repair Damage to ISY Perimeter Fencing					\$ 30,392
The slope movement or large rockfalls damage the ISY fencing. It is assumed that fence replacement is required for a 200-foot long length of fence. A contractor crew hired by the City is dispatched to the site to repair the fence. This is assumed to be a two day project. For safety reasons, ISY is taken out of operation during the construction activity (Outage-Days = 2).					
Remove Damaged Fence	Crew-Day	1	\$4,989	\$4,989	
Replace Damaged Fence Posts	Crew-Day	2	\$4,989	\$9,978	
Replace Damaged Fence Fabric	Crew-Day	2	\$4,989	\$9,978	
Mobilization & Demobilization (5%)	%	5%	\$24,945	\$1,247	
HHWP PM/CM Support - Minor Project	Day	2	\$2,100	\$4,200	

	Unit	Qty	Unit Cost	Subtotal	Total
4 Cleanup Debris Encroaching ISY Yard					\$ 31,074
The slope movement or large rockfalls encroach the ISY yard - representing major slide or rockfall. A contractor crew hired by the City is dispatched to the site to cleanup the yard during repair of the fence. This is assumed to be an additional two day project. For safety reasons, ISY is taken out of operation during this construction activity (Outage-Days = 2 additional).					
Clean-up Cost (Earthwork Cleanup Crew)	Crew-Day	2	\$12,797	\$25,594	
Mobilization & Demobilization (5%)	%	5%	\$25,594	\$1,280	
HHWP PM/CM Support - Minor Project	Day	2	\$2,100	\$4,200	
	Unit	Qty	Unit Cost	Subtotal	Total
5 Address Damage to Electrical Equipment & Structures					\$ 2,150,793
A major slope failure or significant rockfall event occurs, encroaching ISY yard and damaging one bay of switchyard equipment. In response, the City performs temporary re-configuring of the electrical bus system (a shoo-fly) which is assumed to take 20 days. The switchyard is placed back in operation until the damaged equipment is replaced on an emergency basis, which takes 12 months to perform. It is assumed that the project involves: replacement of 1 - 230kV circuit breaker; 3 - 230kV disconnect switches; and supporting structures. (Outage-Days = 20).					
Remove Damaged Switchyard Equipment	Crew-Day	10	\$4,989	\$49,890	
Crane Onsite for Equipment Removal	Day	10	\$800	\$8,000	
Yard Cleanup Prior to Re-Construction	Crew-Day	3	\$12,797	\$38,391	
Furnish & Install New 230 kV Breaker	Ea	1	\$750,000	\$750,000	
Furnish & Install New 230 kV Disconnect	Ea	3	\$150,000	\$450,000	
Repair or Replace Damage Supporting Structures	LS	1	\$150,000	\$150,000	
Mobilization & Demobilization (5%)	%	5%	\$1,446,281	\$72,314	
Contractor GC's, OH&P, M/U on Subs (35%)	%	35%	\$1,446,281	\$506,198	
HHWP PM/CM Support - Major Project	Day	60	\$2,100	\$126,000	
	Unit	Qty	Unit Cost	Subtotal	Total
6 Address Damage to Control Building					\$ 328,355
The same slope hazard that damaged the ISY equipment under Scenario 5 also damages the control building. The control building repair is assumed to be exterior, structural only and is completed in parallel with the Scenario 5 equipment replacement. The same 20-day outage described above applies to this damage scenario as well.					
Remove Damaged Portions of Building	Crew-Day	5	\$4,989	\$24,945	
Crane Onsite for Equipment Removal	Day	5	\$800	\$4,000	
Yard Cleanup Prior to Re-Construction	Crew-Day	2	\$12,797	\$25,594	
Control Building Rehab	LS	1	\$150,000	\$150,000	
Mobilization & Demobilization (5%)	%	5%	\$204,539	\$10,227	
Contractor GC's, OH&P, M/U on Subs (35%)	%	35%	\$204,539	\$71,589	
HHWP PM/CM Support - Major Project	Day	20	\$2,100	\$42,000	

Additional Calculations of Costs for Recovery Cost Items

	Unit	Qty	Unit Cost	Subtotal
1. EARTHWORK CLEANUP CREW - UNIT COST PER DAY (JOC CONTRACT BASIS)				
Crew Foreman	\$ / Day	1	\$ 972	\$ 972
Safety Officer	\$ / Day	0.5	\$ 972	\$ 486
General Laborers (5)	\$ / Day - Ea	5	\$ 583	\$ 2,915
Front-End Loader with Operator (2)	\$ / Day - Ea	2	\$ 2,268	\$ 4,536
Haul Trucks (3)	\$ / Day - Ea	3	\$ 1,296	\$ 3,888
Total Earthwork Cleanup Crew - Unit Cost per Day				\$ 12,797

2. HHWP PROJECT & CONSTRUCTION MANAGEMENT SUPPORT - MINOR PROJECT

HHWP Site Inspector (F/T)	Day	1	\$ 800	\$ 800
HHWP Construction Manager P/T	Day	0.25	\$ 1,200	\$ 300
HHWP Project Manager Involvement P/T	Day	0.25	\$ 1,200	\$ 300
HHWP Admin / JOC Support P/T	Day	0.25	\$ 800	\$ 200
HHWP Safety Oversight	Day	0.25	\$ 1,200	\$ 300
Vehicles	Day	2	\$ 100	\$ 200
Total PM/CM Support - Unit Cost per Day				\$ 2,100

3. LIGHT-DUTY LABOR CREW FOR MINOR CLEAN-UP ASSIGNMENTS

Crew Foreman	\$ / Day	1	\$ 972	\$ 972
General Laborers (3)	\$ / Day - Ea	3	\$ 583	\$ 1,749
Haul Trucks (1)	\$ / Day - Ea	1	\$ 1,296	\$ 1,296
Project Field Supervisor	\$ / Day	1	\$ 972	\$ 972
Total Light-Duty Labor Crew - Unit Cost per Day				\$ 4,989

4. HHWP PROJECT & CONSTRUCTION MANAGEMENT SUPPORT - MAJOR PROJECT

HHWP Site Inspector (F/T)	Day	2	\$ 800	\$ 1,600
HHWP Construction Manager P/T	Day	1	\$ 1,200	\$ 1,200
HHWP Project Manager Involvement P/T	Day	0.25	\$ 1,200	\$ 300
HHWP Admin / JOC Support P/T	Day	0.25	\$ 800	\$ 200
HHWP Safety Oversight	Day	0.25	\$ 1,200	\$ 300
Vehicles	Day	3	\$ 100	\$ 300
Total PM/CM Support - Unit Cost per Day				\$ 3,900

SFPUC Hetch Hetchy Water & Power (HHWP)

RIM FIRE EMERGENCY SERVICES CONTRACT – TASK ORDER NO. 15

HAZARD MITIGATION GRANT PROGRAM – EARLY INTAKE SWITCHYARD SLOPE STABILIZATION PROJECT

ATTACHMENT E Benefit-Cost Report BCA V4.8 Summary Report

29 May 2014

Project: **Early Intake Switchyard (ISY)
Slope Stabilization Project**

Pg 1 of 6

Total Benefits: **\$3,642,972**

Total Costs: **\$1,750,280**

BCR: **2.08**

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

State: **California**

Point of Contact: Jimmy Leong

Analyst: **Black & Veatch
Corporation Walnut Creek,**

Project Summary:

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

Analyst: **Black & Veatch
Corporation Walnut Creek,
CA**

Point of Contact: Jimmy Leong

Phone Number: 209-989-2040

Address: P.O. Box 160, Moccasin, California, 95347

Email: jleong@sfwater.org

Comments: Early Intake Switchyard

Structure Summary For:

HHWP Early Intake Switchyard, P.O. Box 160, Moccasin, California, 95347, Tuolumne

Structure Type: Utility

Historic Building: No

Contact: Jimmy Leong

Benefits: \$3,642,972

Costs: \$1,750,280

BCR: 2.08

Mitigation	Hazard	BCR	Benefits	Costs
TBD	Damage-Frequency Assessment	2.08	\$3,642,972	\$1,750,280

29 May 2014

Project: **Early Intake Switchyard (ISY)
Slope Stabilization Project**

Pg 2 of 6

Total Benefits: **\$3,642,972**

Total Costs: **\$1,750,280**

BCR: **2.08**

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

State: **California**

Point of Contact: Jimmy Leong

Analyst: Black & Veatch
Corporation Walnut Creek,

Structure and Mitigation Details For: HHWP Early Intake Switchyard, P.O. Box 160, Moccasin, California, 95347,
Tuolumne

Benefits: \$3,642,972

Costs: \$1,750,280

BCR: 2.08

Hazard: **Damage-Frequency Assessment - Other**

Mitigation Option: TBD

Latitude:

Longitude:

Project Useful Life: 30

Mitigation Information

Basis of Damages: Expected Damages

Number of Damage Events: 2

Number of Events with Known Recurrence
Intervals: 2

Utilities

Type of Service: Electrical

Other:

Number of Customers Served: 1

Value per Unit of Service: 135,000.00

Total Value of Service per Day: \$135,000

Facility Description:

Early Intake Switchyard

Expected Damages Before and After Mitigation

Analysis Year: 2014

Analysis Duration: 55

Utilities (\$/day): \$135,000.00

Year Built: 1960

User Input Analysis Duration:

Buildings (\$/day):

Roads/Bridges (\$/day):

29 May 2014

Project: Early Intake Switchyard (ISY)
Slope Stabilization Project

Pg 3 of 6

Total Benefits: \$3,642,972

Total Costs: \$1,750,280

BCR: 2.08

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: San Francisco Public
Utilities Commission

State: California

Point of Contact: Jimmy Leong

Analyst: Black & Veatch
Corporation Walnut Creek,

Damages Before Mitigation

Damage Year:

RI: 25.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 20.0

Roads (Days):

Repair Damage to Control Building (\$)	\$328,000
Replace Damaged Equipment (\$)	\$2,150,000
Cleanup Debris Encroaching ISY Yard (\$)	\$0
Repair Damage to ISY Perimeter Fencing (\$)	\$0
Repair Damage to Access Road (\$)	\$0
Cleanup Temp Closure of Access Road (\$)	\$0
Total	\$5,178,000
Total Inflated	

Damages After Mitigation

RI: 25.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 4.0

Roads (Days):

Repair Damage to Control Building (\$)	\$0
Replace Damaged Equipment (\$)	\$0
Cleanup Debris Encroaching ISY Yard (\$)	\$0
Repair Damage to ISY Perimeter Fencing (\$)	\$30,000
Repair Damage to Access Road (\$)	\$28,000
Cleanup Temp Closure of Access Road (\$)	\$47,000
Total	\$645,000

Damage Year:

RI: 10.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 4.0

Roads (Days):

Repair Damage to Control Building (\$)	\$0
Replace Damaged Equipment (\$)	\$0
Cleanup Debris Encroaching ISY Yard (\$)	\$31,000
Repair Damage to ISY Perimeter Fencing (\$)	\$30,000
Repair Damage to Access Road (\$)	\$28,000

RI: 10.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 0.0

Roads (Days):

Repair Damage to Control Building (\$)	\$0
Replace Damaged Equipment (\$)	\$0
Cleanup Debris Encroaching ISY Yard (\$)	\$0
Repair Damage to ISY Perimeter Fencing (\$)	\$0
Repair Damage to Access Road (\$)	\$0

29 May 2014

Project: **Early Intake Switchyard (ISY)
Slope Stabilization Project**

Pg 4 of 6

Total Benefits: **\$3,642,972**

Total Costs: **\$1,750,280**

BCR: **2.08**

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

State: **California**

Point of Contact: Jimmy Leong

Analyst: Black & Veatch
Corporation Walnut Creek,

Cleanup Temp Closure of Access Road (\$)	\$47,000
Total	\$676,000
Total Inflated	

Cleanup Temp Closure of Access Road (\$)	\$0
Total	\$0

Damage Year:

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 0.0

Roads (Days):

Total	\$0
Total Inflated	

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days):

Total	\$0

Damage Year:

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 0.0

Roads (Days):

Total	\$0
Total Inflated	

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days):

Total	\$0

Damage Year:

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 0.0

Roads (Days):

Total	\$0
Total Inflated	

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days):

Total	\$0

29 May 2014

Project: **Early Intake Switchyard (ISY)
Slope Stabilization Project**

Pg 5 of 6

Total Benefits: **\$3,642,972**

Total Costs: **\$1,750,280**

BCR: **2.08**

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

State: **California**

Point of Contact: Jimmy Leong

Analyst: **Black & Veatch
Corporation Walnut Creek,**

Damage Year:

RI:

Are Damages In Current Dollars? Yes

RI:

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days): 0.0

Roads (Days):

Buildings (Days):

Utilities (Days):

Roads (Days):

Total	\$0
Total Inflated	

Total	\$0

Summary Of Benefits

Expected Annual Damages Before
Mitigation

Expected Annual Damages After
Mitigation

Expected Avoided Damages After
Mitigation (Benefits)

Annual:	\$319,374
Present Value:	\$3,963,125

Annual:	\$25,800
Present Value:	\$320,153

Annual:	\$293,574
Present Value:	\$3,642,972

Mitigation Benefits: **\$3,642,972**

Mitigation Costs: **\$1,750,280**

Benefits Minus Costs: **\$1,892,692**

Benefit-Cost Ratio: **2.08**

Cost Estimate

Project Useful Life (years): 30

Construction Type:

Mitigation Project Cost: **\$1,311,000**

Detailed Scope of Work: Yes

Annual Project Maintenance Cost: **\$35,400**

Detailed Estimate for Entire Project: Yes

Final Mitigation Project Cost: **\$1,750,280**

Years of Maintenance: 30

Cost Basis Year:

Present Worth of Annual Maintenance Costs: **\$439,280**

Construction Start Year:

Estimate Reflects Current Prices: Yes

Construction End Year:

Project Escalation:

29 May 2014

Project: **Early Intake Switchyard (ISY)
Slope Stabilization Project**

Pg 6 of 6

Total Benefits: **\$3,642,972**

Total Costs: **\$1,750,280**

BCR: **2.08**

Project Number:

Disaster #: DR-4158

Program: HMGP

Agency: **San Francisco Public
Utilities Commission**

State: **California**

Point of Contact: Jimmy Leong

Analyst: **Black & Veatch
Corporation Walnut Creek,**

Justification/Attachments

Field	Description	Attachments
Analysis Year	Current year.	
Expected damages before mitigation	Refer to Section 4 of Black & Veatch Report dated May 30, 2014, and file "Benefit Estimate 053014.pdf" for more information.	Benefit Estimate 053014.pdf
Mitigation Project Cost	see attached file	ISY Project Cost Estimate Spreadsheet 052814.xls
Number of Customers Served	Refer to summary of analysis in Section 4.5 of Black & Veatch report dated May 30, 2014.	
Project useful life	Based on FEMA guidance, project useful life is selected to be 30 years, as the expected longevity of these facilities that are composed of wood, steel and fencing materials. This is similar to what would be the expected useful life of buildings.	
Unknown Frequency - Damages after Mitigation	Refer to Section 4 of Black & Veatch Report dated May 30, 2014, and file "Benefit Estimate 053014.pdf" for more information.	Benefit Estimate 053014.pdf
Value per Unit of Service	Refer to summary of analysis in Section 4.5 of Black & Veatch report dated May 30, 2014.	
Year Built	According to SFPUC records, ISY was placed into service in 1960.	

Attachment 2

Document entitled "Environmental Checklist, Early Intake Switchyard Slope Stabilization Project," prepared by San Francisco Public Utilities Commission, Bureau of Environmental Management, May 2014

Attachment 2
Environmental Checklist
Early Intake Switchyard Slope Stabilization Project

HAZARD MITIGATION GRANT PROGRAM
PROJECT SUB-APPLICATION

SECTION II - ENVIRONMENTAL CHECKLIST ADDITIONAL COMMENTS

National Historic Preservation Act

The National Historic Preservation Act (NHPA) applies to all federal undertaking, including projects that receive federal funding, are subject to federal regulation, or are located on federal land. The NHPA requires that the lead federal agency make appropriate efforts to identify cultural resources on its lands, assess the historical significance of any such resources under the eligibility criteria of the National Register of Historic Places (NRHP), and take into account the effects of its undertakings on historic properties—that is any archaeological or built environment resource determined to meet the eligibility criteria of the NRHP. Except in extraordinary circumstances structures that are less than 45 years old are not considered eligible to the NRHP.

The only structures in the vicinity of the proposed project are the utilitarian facilities of the Intake Switchyard. The facility was originally constructed in 1958, but has been altered multiple times since that date, most recently in 2013-2014, with the replacement of substantial parts of the equipment. This facility appears very unlikely to meet any of the criteria for eligibility to the NRHP.

The lower part of the slope immediately above the switchyard was cut in 1958 to provide fill for the artificial terrace that underlies the switchyard. There therefore is no potential for archaeological resources to be present in the central part of the lower slope adjacent to the switchyard. The steepness of the remainder of the slope makes the presence of prehistoric or historic deposits unlikely. Archaeological survey of the slope in April 2014 by an archaeologist who meets the Secretary of the Interior's Professional Qualifications (36 CFR 61). Three historic features were identified within the project area, as described below:

Mountain Tunnel adit: An adit for the Mountain Tunnel, constructed between 1920 and 1924 is present at base of the slope between Work Area 1 and Work Area 2. No project activities are proposed that would directly affect this adit, although the proposed catchment walls would abut it on either side. The adit could potentially be eligible to the National Register of Historic Places, as an element of the Mountain Tunnel, which is a critical element in the conveyance of Hetch Hetchy water. Assessment of the historical significance of this feature would be undertaken during project design.

Tram hoist cableway: Hetch Hetchy Water and Power constructed and operated a tram hoist cableway that extended down the slope through the project area to supply personnel and materials to projects under construction in the Tuolumne canyon, starting in 1917. This consisted of about 3,000 linear feet of cableway that ran from the Hetch Hetchy Railroad, at the top of the slope, down to Intake Camp facilities located at what is now the location of the Intake Switchyard. Trams, powered by a cable hoist mechanism located at the top of the slope, ran on rails that were

supported on a raised earthen berm or in some stretches on concrete saddles and wooden trestles. The Intake Camp facilities were demolished or moved to the current location of Intake Camp in the 1940s. The tram hoist cableway was partially dismantled in 1956, with the removal of rails and some supports, but substantial evidence of the system remains, including a concrete cableway section at the top of the slope, pipe saddles that still survive at Cherry Lake Road and in a few segments of the alignment, and the remnants of the berm, which can be traced for most of the length of the system 3,000 feet. Railroad ties reportedly were present in 2001, but most apparently burned in the Rim Fire of 2013, as did the structure that housed the tram hoist mechanism. Foundations and the hoist mechanisms are still present at Hetchy Hetchy Road.

Archaeological survey in 2014 revealed that the berm and associated wire cables are intact within the project area except for the lowest 20 feet of the slope, where the berm was disrupted by past grading and the cable has been dragged out of alignment. The Intake Tram Hoist may be eligible to the NRHP under Criterion A for its important role in the development of the early HHWP water and power facilities in the Tuolumne Canyon, but the system has not been assessed by a historian/ architectural historian. It also has not been determined whether the cableway retains sufficient physical integrity to be eligible for the NRHP, since rail, ties and some of the concrete stanchions have been removed or destroyed and the berm has been disrupted in some areas. The drainage channels and catchment fences proposed for installation in Area 2 would disrupt the berm alignment and therefore further impair the integrity of the berm. Further documentation and analysis and consultation between the lead federal agency and the SHPO will be required.

Water tank: Foundations and remains of a wood-slat water tank are present on a small cut-bench on the upper slope of the project area, just west of the tram cable way. These likely are the remains of the water tank that supplied the Intake Camp facilities established at the site of the switchyard in 1917 in support of the construction of the Lower Cherry Aqueduct, Early Intake Dam and Mountain and Canyon tunnels. These facilities were removed in the 1940s. It is unknown how long the water tank remained in place, but any wooden remnants burned in the Rim Fire in 2013. As a minor utilitarian support facility for Intake Camp, the water tank does not appear to meet any of the criteria of eligibility for the NRHP. Further, the tank site lacks integrity of association, since the facilities it supported were removed many decades ago, and it also lacks physical integrity, since most elements have been destroyed; therefore, it does not appear to be eligible for the NRHP. In any case, it is not anticipated that the proposed project would affect this location

The proposed staging area is graveled and paved. A garage that dates to the historic period was located adjacent to the staging area but burned to its foundations during the Rim Fire. Staging would be confined to the graveled and paved areas adjacent to this structure. The foundations would not be affected.

Further assessment of historic features by a qualified historian/ architectural historian will be required. Conclusions will be subject to review by the Lead Federal Agency (LFA) under Section 106 of the NHPA and to the concurrence of the State Historic Preservation Officer (SHPO). It is assumed that the LFA for the project will conduct SHPO consultation for this project, with technical support provided by SFPUC as needed. SFPUC will provide copies of archaeological site records for the sites described above if requested. In addition, it is anticipated that the LFA will conduct the public outreach required by Section 106, including circulation of letters to Native American tribes, local historical societies and other interested parties. SFPUC will provide draft public consultation letters for the use of the LFA if desired. If the historic features within the

project area are determined to be eligible to the NRHP, SFPUC will work with the LFA to minimize adverse effects through design adjustments to the extent feasible..

Archeological Resource Preservation Act

The Archaeological Resources Protection Act applies to projects located on federal land. As the proposed project is within the SFPUC's Raker Act rights of way across Forest Service land, it is unclear whether the Raker Act is applicable. Irrespective, the cultural resources identification and assessment conducted for compliance with the NHPA also would fulfill ARPA archaeological identification and protection requirements.

Endangered Species Act

A biological assessment was conducted for a project in the area surrounding the proposed project site in April 2014. The assessment included field surveys and background research (e.g. CNDDDB and USFWS species listings) of species that may occur in the area. No threatened or endangered FESA species are known to occur in the area. A state fully-protected species, ringtail, may occur in areas surrounding the project site but it is not expected in the immediate project area. In addition, a state candidate species, Townsend's big-eared bat, has been documented in other areas (and the SFPUC is in the process of coordinating with CDFW for this species for a different project) but it is also not expected to occur in the immediate project area.

A preconstruction biological survey would be conducted in advance of work activities to confirm no sensitive species or nesting birds (depending on the time of year of implementation) are impacted by the project. If nesting birds are found, a buffer will be established around the nest in order to avoid impacts to the birds.

Fish and Wildlife Coordination Act

There are two drainages, one on the east side and one on the west side of the project area. Each drainage leads to a culvert which then drains to the Tuolumne River. Alterations to the flow of water down the slope would direct water into these drainages at several points along the slope. Directing the flow into the drainages may require the placement of rip rap or similar material along an edge of the drainage to direct water flow. If final design indicates impacts to one or both drainages, permits will be obtained from the necessary agencies.

Farmlands Protection Policy Act

According to data available at the website listed below, the project area is located within non-irrigated farmland.

<http://maps.conservation.ca.gov/ciff/ciff.html>

Clean Air Act

Project construction would include SFPUC's standard construction measures for control of dust and air pollutants during Project construction. The majority of grading and associated site work requiring heavy equipment and generating dust would be completed within a period of approximately three months. The project is not anticipated to generate substantial air emissions based on the inclusion in the project of standard dust controls, the small size of the area to be graded, the limited number of pieces of construction equipment that would be needed, and the short duration of grading and excavation. The project would not generate any operational emissions. The project site is located in the Tuolumne County Air Pollution Control District (TCAPCD). TCAPCD regulates dust emissions through its review of grading permits issued by agencies within the county, but does not regulate criteria pollutant construction emissions, as

from construction equipment and vehicles. There are no residences or other sensitive receptors within 1,000 feet of the project site; therefore, the project would not result in exposure of sensitive receptors to significant pollutant concentrations.

Adverse effects to air quality therefore are not anticipated and no agency consultation would appear to be required.

Clean Water Act (Section 404) & Rivers and Harbors Act (Section 10)

Work will occur adjacent to two drainages which drain to the Tuolumne River approximately 200-300 feet from the project area. As noted above, if rip rap or similar material is needed at an edge of the drainage to direct flow from the slope, permits will be obtained from the necessary regulatory agencies, which may include the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and the California Department of Fish and Wildlife. Flagging will be installed along the perimeter of drainages to ensure they are not impacted during construction and best management practices will be in place to avoid indirect impacts to the drainages or the Tuolumne River.

Wild and Scenic Rivers Act

The project is adjacent to the Tuolumne River (approximately 200-300 feet away), with a large power switchyard between the project and river. The portion of the Tuolumne River adjacent to the project is excluded from the Wild and Scenic Rivers designation. The Wild and Scenic Rivers exclusion area extends from approximately one mile upstream of the project site to approximately 0.25 miles downstream of the project site. Refer to the following website for an overview of the Tuolumne Wild and Scenic River areas. The project area is located on the map just south of Preston Falls (right hand side of map) below the Robert C Kirkwood label on the map and on the southwest side where a road crosses the Tuolumne River. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5390822.pdf

Wilderness Act

The Yosemite Wilderness is located approximately seven miles east of the Project area and would not be affected by project implementation.

Other Relevant Laws and Environmental Regulations

The USFS may require a special use permit for project implementation.

EXECUTIVE ORDERS

E.O. 11988- Floodplains

The project is located outside of the FEMA Effective 100-year floodplain according to the California Department of Water Resources website (<http://gis.bam.water.ca.gov/bam/>). A map was not available that would depict the 500-year floodplain, but it is assumed that, based on the proximity of the 100-year floodplain, the project would be within the 500-year floodplain.

The project is depicted on a FEMA FIRM, predominantly at the northern-most edge of Section 06109C1275C. The project area is outside of the floodplain area indicated on the map at the following FEMA FIRM website:
<https://msc.fema.gov/webapp/wcs/stores/servlet/mapstore/homepage/MapSearch.html?isFloodMap=true&AddressQuery=tuolumne%20county%2C%20ca>

E.O. 11990- Wetlands

There are no wetlands located in the project area. The NWI map was accessed on 5/19/14 from the USFWS website at the following web address: <http://www.fws.gov/wetlands/Data/Google-Earth.html>

E.O. 12898- Environmental Justice

The proposed project has no potential to adversely affect any community or low income or minority population. The project site is located in an isolated rural area immediately adjacent to an existing electrical substation. Because project construction/ work activities would be of small scale and short duration, only a small number of short term jobs/ limited amount of income would be generated by the project. SFPUC's contracting practice includes substantial requirements for outreach to disadvantaged and local business enterprises. Therefore, it is not anticipated that the project would have the potential to significantly affect any low income or minority community or population.

Attachment 3

Project Cost Estimate Excel Spreadsheet, prepared by Black & Veatch, May 2014

Hazard Mitigation Grant
Early Intake Switchyard Slope Stabilization Project

SECTION V – COST ESTIMATE					
<p>Some sample categories for projected expenditures are: Project Management, Engineering & Design, Site Acquisitions, Labor, Materials & Supplies, Equipment, Transportation. Additional line-item suggestions are included in sample budget categories on page 12 of sub-application instructions. Lump sum(s) in the unit of measure should not be commingled. Explain projected expenditures in detail in the Cost Estimate Narrative in Section V.</p> <p><u>You must use this spreadsheet. Do not copy or adjust.</u></p>					
<p>Refer back to the SUB-APPLICATION INSTRUCTIONS SECTION V - cost estimate for some ineligible items.</p>					
A.	Item name:	Work Area 1 Slope Grading by Earthwork Crew - see narrative			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	10.00	Crew-Days	17,334.00	173,340.00	
B.	Item name:	Work Area 1 Catchment Wall Construction - see narrative			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	100.00	Foot	960.00	96,000.00	
C.	Item name:	Work Area 2 Catchment Fences - see narrative			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	800.00	Foot	478.00	382,400.00	
D.	Item name:	Surface Water Diversion - V-Ditch Construction - see narrative			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	2000.00	Foot	133.65	267,300.00	
E.	Item name:	Vegetative Surface Stabilization			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	5.00	Acres	5,400.00	27,000.00	
F.	Item name:	Mobilization / Demobilization for Items A - E			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	0.05	%	946,040.00	47,302.00	
G.	Item name:	Final Design & Preparation of Contract Documents			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	662.00	Manhours	150.00	99,300.00	
H.	Item name:	Historical and Biological/Water Quality Work by SFPUC			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	120.00	Manhours	150.00	18,000.00	
I.	Item name:	Environmental Coordination with USFS and Cal-OES			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	120.00	Manhours	150.00	18,000.00	

Hazard Mitigation Grant
Early Intake Switchyard Slope Stabilization Project

J.	Item name:	Professional Services for Permitting Support			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	200.00	Manhours	150.00	30,000.00	
K.	Item name:	Construction Management Services			
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
	662.00	Manhours	150.00	99,300.00	
L.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
M.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
N.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
O.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
P.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
Q.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
R.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
S.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
T.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
U.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
V.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	
				0.00	
W.	Item name:				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate	

Hazard Mitigation Grant
Early Intake Switchyard Slope Stabilization Project

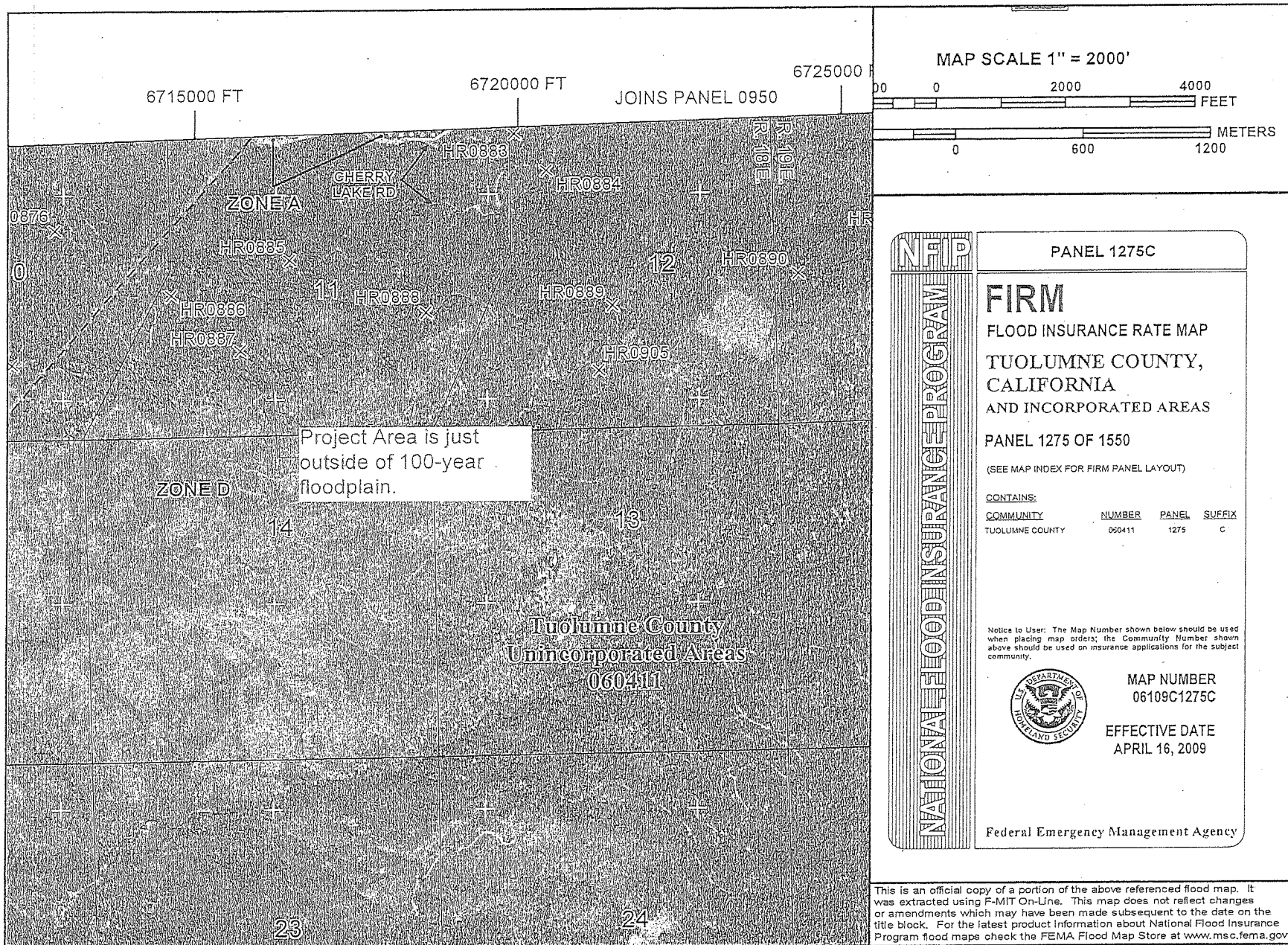
						0.00
X.	Item name:					
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate		
				0.00		
* Y.	Item name:	Subapplicant Pre-Award Costs				
	Unit Qty:	Unit of Measure	Unit Cost	Cost Estimate		
	1.00	LS	54,327.00	54,327.00		
<p>* Item Y SUB-APPLICANT PRE-AWARD COST</p> <p>Allowable Pre-Award Project Costs: Costs incurred after the HMGP application period has opened, but prior to grant award, are identified as pre-award costs. Pre-award costs directly related to developing the application may be funded. Such costs may have been incurred to develop a BCA, to gather environmental and historic data, for preparing design specifications, or for workshops or meetings related to development and submission of the application. <u>Sub-applicants who are not awarded sub-grant funds will not receive reimbursement for pre-award costs.</u></p>						
TOTAL PROJECT COST ESTIMATE				→	1,312,269.00	
SPECIFY COST BREAKDOWN						
SUB-APPLICANT (NON-FEDERAL) SHARE			→	\$328,067.00	25%	
FEDERAL SHARE (MAX 75.00 %) OF ELIGIBLE COSTS)			→	\$984,202.00	75%	
ESTIMATED TOTAL COST				\$1,312,269.00	100%	
					↑	
					Must Be 100%	
MATCH SOURCES (NON-FED SHARE) FUNDING						
TOTAL PROJECT COST ESTIMATE			\$	1,312,269.00		
PROPOSED FEDERAL SHARE			\$	984,202.00		
FEDERAL SHARE PERCENTAGE				75%		
PROPOSED NON-FEDERAL SHARE			\$	328,067.00		

Hazard Mitigation Grant
Early Intake Switchyard Slope Stabilization Project

NON-FEDERAL PERCENTAGE				25%			
1. SOURCE :		Select: Local Agency Funding, Other Agency Funding, Private Non-Profit, or State Agency Funding					
SOURCE NAME:							
FUNDING TYPE:							
		(Select: Administration, Cash, Consulting Fees, Engineering Fees, Force Account Labor your agency personnel, Program Income, etc).					
OTHER FUNDING TYPE:							
FUNDS AVAILABILITY DATE: →							
FUNDS COMMITMENT LETTER DATE: →							

Attachment 4

NFIP Flood Insurance Rate Map, Panel 1275C.



Attachment 5

Maintenance Letter, May 29, 2014



**San Francisco
Water Power Sewer**

Operator of the Hetch Hetchy Regional Water System

Post Office Box 160
Moccasin, CA 95347

T 209.989.2012

F 209.989.2104

Junction of Hwy 49 and Hwy 120

May 29, 2014

California Office of Emergency Services
Hazard Mitigation Grants Division
3650 Schriever Avenue
Mather, CA 95655

RE: *Early Intake Switchyard Slope Stabilization Project*

Dear State Hazard Mitigation Officer:

This is to confirm that the City and County of San Francisco is committed to perform the necessary maintenance for the entire useful life of this project 30 years once completed. Hetch Hetchy Water & Power is allocated an annual budget which will allow maintenance to occur as needed to ensure the Early Intake Switchyard remains in good repair and operational.

Entity responsible for the maintenance: Hetch Hetchy Water & Power

Maintenance Task: Cleanout debris behind catchment wall and catchment fences; repair damage to wall and fences; inspect and cleanout culverts, ditches, and drains.

Maintenance Schedule: Annually.

Cost of Maintenance: \$35,400 per year.

Associated Budget: \$35,400 per year.

Please contact Margaret Hannaford if you have any questions.

Sincerely,

Margaret Hannaford
Division Manager
Hetch Hetchy Water & Power
San Francisco Public Utilities Commission
City and County of San Francisco

Edwin M. Lee
Mayor

Vince Courtney
President

Ann Moller Caen
Vice President

Francesca Vietor
Commissioner

Anson Moran
Commissioner

Art Torres
Commissioner

Harlan L. Kelly, Jr.
General Manager



PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO. 19-0147

WHEREAS, The 2013 Rim Fire severely burned and denuded the slopes of vegetation above the Early Intake Switchyard, which subsequently began experiencing a high rate of rock falls and debris flows, which may cause damage to the switchyard and loss of power transmission capability to the City; and

WHEREAS, The 2013 Rim Fire was declared a major federal disaster, which enabled the State of California to be eligible to apply for Hazard Mitigation Grant Program (HMGP) funds from the Federal Emergency Management Agency (FEMA); and

WHEREAS, In 2016, the San Francisco Public Utilities Commission (SFPUC) submitted, through the California Governor's Office of Emergency Services (Cal OES), a sub-application (FEMA-4158-DR-CA, Project #0272, FIPS#075-00000) for a Hazard Mitigation Grant from FEMA to help fund the implementation of the Early Intake Slope Stabilization project (the Project) to reduce the risk of slope hazards, which may cause damage to the Early Intake Switchyard and loss of power transmission capability to the City; and

WHEREAS, In June 2016, FEMA awarded SFPUC, through Cal OES, a grant in the amount of \$404,208 in federal funds for Pre-award and Phase One work on the Project; and

WHEREAS, On February 28, 2017, through Resolution No. 55-17, the San Francisco Board of Supervisors authorized the General Manager of the SFPUC to accept and expend up to \$404,208 of grant funding through the HMGP for Pre-award and Phase One work on the Project; and

WHEREAS, Pre-award and Phase One work on the Project is now complete; and

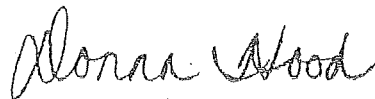
WHEREAS, In August 2018, FEMA approved grant funding through the HMGP in the amount of \$488,259 for Phase Two (construction) of the Project; and

WHEREAS, The estimated cost of the overall Project is \$2,800,000; and

WHEREAS, In addition to the grant funds, funds for Pre-Award, Phase One, and Phase Two work are available from Hetchy Capital Improvement Project No. CUH101 Hetchy Water – Power Infrastructure; now therefore, be it

RESOLVED, That this Commission hereby authorizes the General Manager of the SFPUC to request approval from the Board of Supervisors to accept and expend Hazard Mitigation Grant funds from the Federal Emergency Management Agency in the amount not to exceed \$488,259 for Phase 2 of the Early Intake Slope Stabilization project.

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of July 23, 2019.



Secretary, Public Utilities Commission

Early Intake Slope Hazard Mitigation Project - Phase 2 Budget

	Budget	Contractor/ Consultant Costs	SFPUC Direct Labor Costs	Notes
1 Construction Contract	\$1,091,240	\$1,091,240	\$0	HH-993 - Early Intake Switchyard Slope Hazard Mitigation Project (Construction Contract awarded on 7/23/19)
2 Project Management ^a	\$67,614	\$8,332	\$59,282	
3 Construction Management ^a	\$276,403	\$57,520	\$218,883	
4 Engineering Services During Construction ^a	\$160,739	\$81,002	\$79,737	
Total:	\$1,595,996	\$1,238,094	\$357,902	

Total Project Budget for Phase 2 ^b	\$1,595,996
FEMA Grant Share	\$488,259
Local Share	\$1,107,737

^a Estimated

^b Does not include indirect contingency costs in the amount of \$159,600 (10% of project budget)

OFFICE OF THE MAYOR
SAN FRANCISCO



LONDON N. BREED
MAYOR

TO: Angela Calvillo, Clerk of the Board of Supervisors
FROM: Sophia Kittler
RE: Accept and Expend Grant - California Governor's Office of Emergency
Services - Hazard Mitigation Grant Program - \$488,259
DATE: Tuesday, October 22, 2019

SK

Resolution authorizing the San Francisco Public Utilities Commission General Manager to accept and expend a Hazard Mitigation Program grant in the amount of \$488,259 from the Federal Emergency Management Agency through the California Governor's Office of Emergency Services for Phase Two of the Early Intake Switchyard Slope Stabilization Project.

Should you have any questions, please contact Sophia Kittler at 415-554-6153.

RECEIVED
BOARD OF SUPERVISORS
SAN FRANCISCO

2019 OCT 22 PM 4:47

1 DR. CARLTON B. GOODLETT PLACE, ROOM 200
SAN FRANCISCO, CALIFORNIA 94102-4681
TELEPHONE: (415) 554-6141



Hetch Hetchy
Regional
Water
System

San Francisco Public Utilities Commission

Early Intake Switchyard Slope Hazard Mitigation

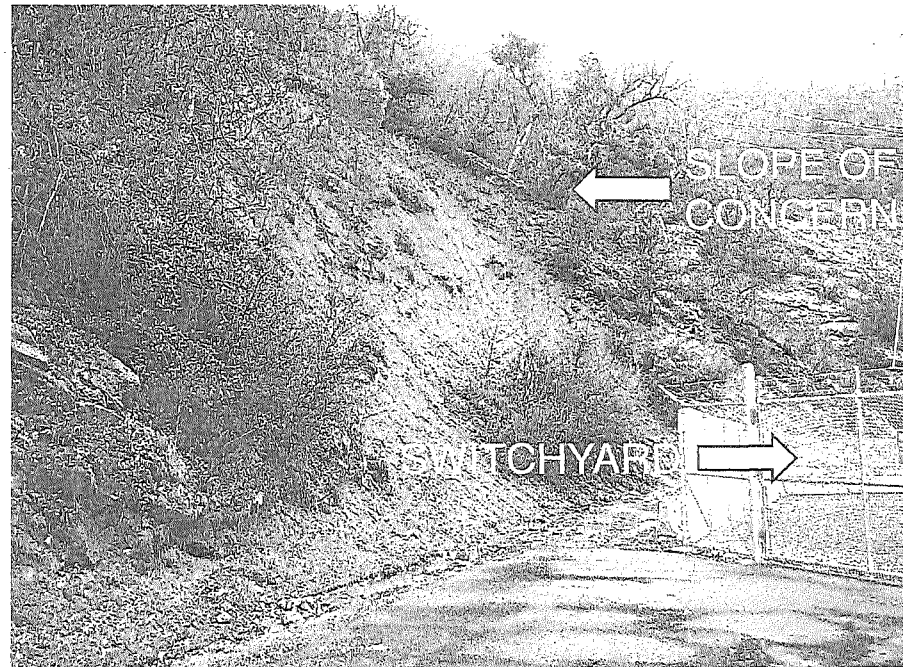
Operated by the San Francisco Public Utilities Commission



**San Francisco Board of Supervisors
Budget and Finance Committee Meeting
Accept and Expend FEMA/Cal OES Hazard Mitigation Grant (Phase 2)
November 13, 2019
Susan Hou, Regional Project Manager of Water Capital Projects**

Background

- The Early Intake Switchyard (ISY) is a critical 230kV switchyard that transmits electric power generated at the Kirkwood and Holm Power Houses in the Hetch Hetchy region to the City
- 2013 Rim Fire
 - Increased threat of damage to ISY
 - Declared a major federal disaster, allowing for SFPUC to apply for FEMA grant funds
- The ISY Slope Hazard Mitigation Project will reduce the risk of future damage





Hazard Mitigation Grant Program

- In 2014 the SFPUC submitted a sub-application to the HMGP

	Grant Amount	City's Share	Total
<u>Phase 1</u> <ul style="list-style-type: none">• Sub-Application• Environmental Studies• Design	\$404,208	\$594,341	\$998,549
<u>Phase 2</u> <ul style="list-style-type: none">• Bid and Award• Construction• Closeout	\$488,259	\$1,107,737	\$1,596,056
Total	\$892,467	\$1,702,078	\$2,594,605



Hetch Hetchy
Regional
Water
System

Phase 1 Activity

Date	Activity
June 2016	FEMA approved Phase 1
February 2017	BOS authorized SFPUC GM to accept and expend grant funds for Phase 1
May 2019	All Phase 1 activities were completed
October 2019	Reimbursement for Phase 1 costs received



Phase 2 Activity

Date	Activity
August 2018	FEMA approved Phase 2
July 2019	SFPUC Commission authorized the GM to request approval from the BOS to accept and expend Phase 2 grant funds
September 2019	Construction Notice to Proceed issued and currently in progress
January 2020	Construction Substantial Completion
April 2020	Submit for reimbursement of Phase 2 costs

Today's Request

- SFPUC is requesting the BOS to authorize SFPUC GM to accept and expend Phase 2 grant funds for the ISY Slope Hazard Mitigation Project
- Grant is for \$488,259

Thank You!

