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Document Title:	2019 Annual Compliance Report
Description:	Annual Compliance Report
Filer:	Anthony TJ Gomez
Organization:	Pacific Gas and Electric
Submitter Role:	Applicant
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Attachment A
Compliance Matrix

COLUSA GENERATING STATION COMPLIANCE MATRIX BASED ON CEC FINAL DECISION

Color code key:	Construction Item	Commissioning Item	Operations Item	Submitted to CEC or Agency	Approved by CEC/No Longer Applicable

Cond. #	Sort Code	Description of Project Owner's Responsibilities	Verification/Action/Submittal Required by Project Owner	Timeframe	Lead Respons. Party	Date sent to CEC, CBO or agency	Log Number	Status	Comments
AQ-01	COMM	All facility operating staff shall be advised of and familiar with these permit conditions.	Provide CPM and APCO with signed records of facility operating staff indicating review of permit conditions and maintain training and records documenting this training at the site.	30 days prior to first fire	PG&E	**On file in Environmental Managers Office**		**Ongoing with New Hires**	
AQ-02	CONS	Right of entry shall be provided at all times.	Project Owner shall make site available to reps of the District, ARB and CEC for inspection, etc.	As required	PG&E			Ongoing	
AQ-03	OPS	In the case of shutdown or restart of air pollution control equipment for necessary scheduled maintenance, notify CPM and APCO of such shutdown 24 hours prior.	Notify the CPM and APCO 24 hours in advance of planned shutdowns for maintenance.	As required	PG&E			Ongoing	
AQ-04	OPS	If any upset or breakdown occurs with permitted equipment that causes excess emissions of air contaminants, the APCO shall be notified with 24 hours or by 9:00am by the following work day.	In addition to phone call, also submit a written statement of full disclosure to the APCO within 72 hours, including date, time, duration, estimated emissions, cause and remedy.	As required	PG&E			Ongoing	
AQ-05	OPS	Fugitive emissions, including dust and odors, shall be controlled at all times such that a nuisance is not created at any point beyond the facility's property lines.	Project Owner shall document any complaints received from the public in the Quarterly Operation Reports (QORs) required by AQ-22 and make site available to APCO, ARB, and CEC representatives.	Quarterly after COD	PG&E			Ongoing	
AQ-07.2	COMM	A source test protocol will be submitted to the APCD for approval.	Submit source test protocol to the APCD for approval by the APCO.	45 days prior to conducting annual source tests	PG&E			Annual Requirement	
AQ-07.3	COMM	Notify the CPM and District 10 days prior to actual source test.	Notify the CPM and APCD prior to any compliance source test.	10 days prior to conducting any compliance source test	PG&E			Annual Requirement	
AQ-08	COMM	**CONDITION MODIFIED BY CEC ORDER 7-15-09:** Stack gas testing shall be required on an annual basis for NOx, VOC, and CO on the HRSG stacks. The HRSG stacks shall also be tested for SOx and PM10 emissions during the first year and in subsequent years if requested by APCO. The natural gas water bath heater shall be tested for NOx, SOx, VOC, CO, and PM10 during the first year and thereafter only as requested by APCO.	The results and field data colleced during source tests shall be submitted to the CPM and the District within 60 days of testing.	Within 60 days of testing	PG&E			Annual Requirement	
AQ-09	COMM	Annual testing of the HRSG stacks shall include quantification of formaldehyde and NH3 emissions for compliance with permit limits.Verify by continuous recording the ammonia injection rate to the system. The ammonia source test shall be conducted over the expected operating rate of the turbine as set forth in the Condition.	Provide results and field data collected during source tests to CPM and APCD. Submit proposed ammonia injection/emission rate correlation to the APCD and CPM for approval with the ammonia source test report.	Within 60 days of testing	PG&E			Annual Requirement	

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AQ-10	OPS	**CONDITION MODIFIED BY CEC ORDER 7-15-09:** The gas turbines, duct burners, and natural gas water heater shall be fired exclusively on pipeline quality natural gas.	Submit information on the quality and type of fuel used for the gas turbines, duct burners, and natural gas water bath heater to the CPM/APCO in the QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-11	OPS	The average annual sulfur content in the natural gas shall be less than or equal to 0.3 grains per 100 SCF. Conduct monthly testing at the site using approved methods to determine sulfur content. Natural gas testing info from Burney will also be reviewed and provided to the APCD.	Compile the required data on the sulfur content of the natural gas and submit to the CPM and APCO in the QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-13a	OPS	All applicable federal standards and test procedures of Subpart KKKK shall be met.	Provide copies of all correspondence with EPA regarding compliance with Subpart KKKK to the APCD and CEC.	Quarterly after COD	PG&E			Ongoing	
AQ-14	OPS	CTGs shall meet a VOC limit of 2.0 ppmvd w/ duct burner firing and 1.38 ppmvd w/o duct firing at 15% O2 averaged over 1 hour. Maximum hourly steady state VOC emission limits for each CTG are 7.2 pounds with duct firing and 3.4 pounds w/o duct firing	Submit to the CPM and APCO CTG source test emissions data demonstrating compliance with this condition as required by condition AQ-8 and provide operating data that establishes ongoing compliance as part of AQ-22.	Within 60 days of testing	PG&E			Ongoing	
AQ-15	OPS	The CTGs shall meet a NOx limit of 2.0 ppmvd @15% O2 averaged over one hour except during commissioning. Maximum hourly steady state NOx emission limits for each CTG are 20.7 pounds with duct firing and 15.3 pounds without duct firing.	Submit to the CPM and APCO CTG continuous emissions data demonstrating compliance with this condition as part of the QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-16	OPS	The CTGs shall meet a CO limit of 3.0 ppmvd @15% O2 over a three-hour rolling average except during commissioning. Maximum hourly steady state CO emission limits for each CTG are 18.9 pounds with duct firing and 14.0 pounds without duct firing.	Submit to the CPM and APCO CTG continuous emissions data demonstrating compliance with this condition as part of the QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-18	OPS	Ammonia slip shall be limited to 5.0 pmvd @15% O2 over one hour. Formaldehyde emissions will be limited to 0.917 lbs per MMscf of natural gas. Maximum hourly steady state NH3 emission limits for each CTG are 19.2 pounds with duct firing and 14.2 pounds without duct firing.	Submit to the CPM and APCO CTG source test emissions data demonstrating compliance with this condition a part of the QOR. Provide to the CPM and APCO for approval a calculation method to determine the ammonia slip emissions, using source test data, based on the NOx concentration and the ammonia injection rate; this calculation shall be revised for approval as necessary after each source test performed under AQ-9.	Within 60 days of testing	PG&E			Annual Requirement	
AQ-19a	OPS	CEMS shall be installed to sample, analyze, and record NOx, CO, and O2 concentration in the exhaust gas of both HRSG stacks.	Make the site available for inspection by the APCD, ARB, and CEC to verify CEMS is properly installed and operational.	As required	PG&E			Ongoing	
AQ-19b	OPS	CEMS will generate reports of emissions data in accordance with permit requirements and will send alarm signals to the plant DCS control room when emissions levels approach or exceed pre-selected limits.	Submit emissions data generated by the CEMS to the CPM and APCO as part of the QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-19c	OPS	RATA tests will be conducted annually to verify performance of the CEMS.	Provide RATA test results along with annual source test report as required under AQ-8.	Annually	PG&E			Ongoing	
AQ-22	OPS	Quarterly reports of CEMS and process data, including startup info, shall be submitted to the District within 30 days after the end of each quarter.	Provide information as part of QORs. (Format will be determined by the District and may include both electronic spreadsheet and hard copy files.)	Quarterly after COD	PG&E			Ongoing	

Cond. #	Sort Code	Description of Project Owner's Responsibilities	Verification/Action/Submittal Required by Project Owner	Timeframe	Lead Respons. Party	Date sent to CEC, CBO or agency	Log Number	Status	Comments
AQ-25	OPS	**CONDITION MODIFIED BY CEC ORDER 7-15-09:** The total emissions from the CTGs and HRSGs shall not exceed those established in the Condition for hourly and daily operations (see emission limits set forth in table in condition).	Submit CTG and HRSG emissions data to CEC CPM and APCO demonstrating compliance with the condition as part of QORs.	Quarterly after COD	PG&E			Ongoing	
AQ-26	OPS	**CONDITION MODIFIED BY CEC ORDER 7-15-09:** The total emissions from the Colusa Power Plant shall not exceed the quarterly and annual combustion emission limits established in the Condition [all numbers have been revised from original Final Decision]	Submit to the CPM and APCO the plant emissions data demonstrating compliance with this condition.	Quarterly after COD	PG&E			Ongoing	
AQ-29	OPS	Total facility emissions of Hazardous Air Pollutants shall not exceed 10 tons/year for any single pollutant except ammonia, formaldehyde, and propylene.		Annually	PG&E			Ongoing	
AQ-SC6	OPS	Submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. Project Owner shall submit to the CPM any modification to any permit proposed by the District of EPA and any revised permit issued by the District of EPA.	Submit any proposed air permit modification to the CPM.	Within 5 working days of its submittal	PG&E			Ongoing	
AQ-SC9	OPS	Submit to the CPM Quarterly Operation Reports following the end of each calendar quarter and containing the info required by Condition AQ-19.	Submit QORs to the CPM and APCO no later than 30 days following the end of each calendar quarter.	Quarterly after COD	PG&E			Ongoing	
AQ-SC11	OPS	**NEW CONDITION PER CEC ORDER 7-15-09:** The wet surface air cooler spray water shall be tested for total dissolved solids and that data shall be used to determine and report the particulate matter emissions from the wet surface air cooler. The wet surface air cooler spray water shall be tested at least once annually during the anticipated summer operation peak period (July through September).	The project owner shall provide the water quality test results and the wet surface air cooler particulate (PMI *0/PM2.5)* emissions estimates to the CPM as part of the fourth quarter's quarterly operational report (AQ-SC9).	At least once annually during summer peak period				Ongoing	
BIO-07	OPS	Incorporate biological mitigation measures into the BRMIMP and permanent or unexpected permanent closure plans.	Address all biological resource related issues associated with facility closure and provide final measures in a biological resources element of the final closure plan.	12 months prior to start of closure activities	PG&E			Ongoing	
COM-01	OPS	Unrestricted Access		Ongoing	PG&E			Ongoing access provided during construction	
COM-02	OPS	Compliance Record--The files are to contain copies of all "as-built" drawings, all documents submitted as verification for conditions, and all other project-related documents.		Ongoing	PG&E			Ongoing	
COM-05	OPS	Compliance Matrix	Submit a compliance matrix with each MCR and also in ACR	Include in MCR and in ACR	PG&E			Ongoing	
COM-07	OPS	Annual Compliance Report	Submit to CPM on an annual basis	Annually	PG&E			Ongoing	
COM-09	OPS	Annual Energy Facility Compliance Fee	Submit annual compliance fee to CEC	During life of project	PG&E			Ongoing	

Cond. #	Sort Code	Description of Project Owner's Responsibilities	Verification/Action/Submittal Required by Project Owner	Timeframe	Lead Respons. Party	Date sent to CEC, CBO or agency	Log Number	Status	Comments
COM-10	OPS	Reporting of Complaints, Notices and Citations	Report to the CPM all notices, complaints, and citations within 10 days of receipt.	As required	PG&E			Ongoing	
COM-11	OPS	Planned Facility Closure	Submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure	12 months prior to start of closure activities	PG&E				
COM-13	OPS	Unplanned Permanent Facility Closure	The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.	Within 90 days of permanent closure	PG&E	9/29/2010	CGS10-L-0111	Approved via email 10/15/10	
COM-14	CONS	Post-Certification Changes to the Decision		As required	PG&E			Amendments are discussed in MCR	
CUL-04	CONS	Prepare the Cultural Resources Report (CRR) in ARMR format. Include all information specified in Condition.	Submit CRR within 90 days after completion of ground disturbance (including landscaping).	Within 90 days after completion of landscaping	PG&E	7/28/2011	CGS11-L-0026	Approved 4/9/13	
GEN-01c	OPS	Once the certificate of occupancy has been issued, inform the CPM of any construction, addition, alterations, moving, demolition, repair, or maintenance to be performed on any portions of the completed facility for the purpose of complying with the above stated codes.	Submit required info to the CPM.	At least 30 days prior to such work	PG&E				
GEN-08	CONS	Obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The Project Owner shall request the CBO to inspect the completed structure and review the submitted documents. The Project Owner shall retain one set of approved engineering plans, specifications, and calculations at the project site or other accessible location during the operation of the project.	Submit to the CBO a written notice that the completed work is ready for inspection and a signed statement that the work conforms to the final approved plans.	Within 15 days of completion of any work	PG&E/CBO				
HAZ-01	OPS	Do not use any hazardous material in any quantity or strength not listed in Appendix C unless approved in advance by the CEC CPM.	Report to the CPM a list of hazardous materials and storage quantities contained at the facility	Include in Annual Compliance Report	PG&E			Ongoing	
NOISE-02	OPS	Throughout the construction and operation of the project, document, investigate, evaluate, and attempt to resolve all project-related noise complaints. Noise Complaint Resolution process will be used.	File a Noise Complaint Resolution Form with the City and the CPM documenting resolution of the compliant.	Within 5 days of receiving a noise compliant	PG&E				
NOISE-08	OPS	In the event legitimate noise complaints are made by owners or occupants at the two residences locate at ML1, ML2, or RC1 during operation of the CGS, the Project Owner shall offer to pay for the following noise attenuating upgrades (see list in Condition).	Upgrades shall be installed (unless impossible due to circumstances beyond Project Owner's control) within six months of the receipt of the compliance. Provide documentation certifying the items listed in the Condition.	As required	PG&E			Ongoing	

Cond. #	Sort Code	Description of Project Owner's Responsibilities	Verification/Action/Submittal Required by Project Owner	Timeframe	Lead Respons. Party	Date sent to CEC, CBO or agency	Log Number	Status	Comments
PAL-06	OPS	Through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction .	Maintain in compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. Maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report.	As required					
SOIL & WATER-04b	OPS	Notify the CEC of any violations of the agreement requirements, limits or amounts.	Provide copies of any NOVs from the GCID. Fully explain corrective actions in next MCR.	Within 10 days of NOV	PG&E			Ongoing	
SOIL & WATER-07b	OPS	Submit any required monitoring information to the CPM in the annual compliance report.	Submit requested information.	Include in ACR	PG&E			Ongoing	
SOIL & WATER-07c	OPS	Submit copies of an NOVs to the CPM.	Submit requested info to CPM.	Within 10 days of receipt of NOV; explain correction actions in ACR	PG&E			Ongoing	
SOIL & WATER-08b	OPS	Prepare an annual water use summary which includes the monthly range and monthly average of daily raw water usage in gpd and total water used by the project on a monthly and annual basis in acre-feet. Potable water use on the site shall be recorded on a monthly basis. (See additional details for annual water use summary in Condition)	Submit requested info to CPM.	Annually	PG&E			Ongoing	
SOIL & WATER-09c	OPS	Monitor the waste water system following the general standards adopted in the SWRCB's onsite wastewater treatment system regs or the procedures outlined in the CPM-approved O&M manual. Provide testing results.	Provide requested into to CPM.	Include in ACR	PG&E			Ongoing	
TLSN-03	OPS	Take reasonable steps to resolve any complaints of interference with radio or TV signals from operation of the proposed lines.	Provide reports of line-related complaints along with related mitigation measures in the annual report for the first five year.	Include in ACR	PG&E			Ongoing	
VIS-01b	OPS	Notify the CPM that the surface treatment of all listed structures and buildings has been completed and is ready for inspection and submit electronic color photographs taken from the same KOPs	Set up an inspection appointment.	Within 90 days of start of commercial ops	PG&E	3/24/2011	CGS11-L-0014	4/11/2011	
VIS-02b	COMM	Notify the CPM that the lighting has been completed and is ready for inspection.	Set up an inspection appointment.	Prior to start of commercial operation	Gemma	9/19/2011	CGS11-L-0036	Approved 9/29/2011	
VIS-02c	OPS	Notify the CPM of any complaints re: lighting.	Submit a complaint resolution form to the CPM record each lighting complaint and document resolution of that complaint.	Within 48 hours after receiving a complaint	PG&E			Ongoing	

Cond. #	Sort Code	Description of Project Owner's Responsibilities	Verification/Action/Submittal Required by Project Owner	Timeframe	Lead Respons. Party	Date sent to CEC, CBO or agency	Log Number	Status	Comments
VIS-03	CONS	Provide landscaping that reduces the visibility of the power plant structures and complies with local policies and ordinances. Trees shall be strategically placed along the southern, eastern, and northern facility boundaries as appropriate and of sufficient density and height to screen the plant structures to the greatest feasible extent within the shortest feasible time.	Prepare and submit a landscaping plan (see Condition for details on info to include in plan) to the CPM for review and approval and to the County for review and comment.Notify the CPM and County within 7 days after completing installation of landscaping. Report on landscape maintenance activities in ACR.	At least 90 days prior to installation of landscaping -	PG&E			Submitted 8/25/2010 Approved 9/14/2010 Ongoing for Annual Report	
WASTE-04	CONS	Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the Project Owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.	Notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the manner in which project-related wastes are managed.	As required	PG&E			Ongoing	
WASTE-05b	OPS	Prepare an Operations Waste Management Plan for all wastes generated during construction of the facility.	Submit plan to the CPM for review and approval. See Final Decision WASTE-5 for plan requirements.	Provide training sign-in sheets in first MCR Report in Annual Report	PG&E	9/23/2010	CGS10-L-0109	Approved on 10/18/10	

Attachment B
Project Operating Status Summary

Per Com-7 Item 2 we are to provide; "A Summary of the current project operating status and an explanation of any significant changes to the facility operations during the year"

This project, completed in the fall, can be summarized as follows:

Installation of a concrete slab on the south end of the facility to eliminate hiding areas for rattlesnakes.

There were no other significant changes to the facility and the plant is operating normally.

Attachment C
Accompanying Documents

CEC 2017 Annual Compliance Report		
Reporting Conditions, per COM-7, Item 3		
Condition of Certification	**Reporting**	**Comments**
BIO-2	Designated Biologist Record Summaries	See attached documentation, Appendix 1
HAZ-1	List of chemicals onsite	See attached documentation, Appendix 2
Noise-8	Noise Complaints	See attached documentation, Appendix 3
SOIL & WATER-2	SWPPP Monitoring and Maintenance Activities	See attached documentation, Appendix 4
SOIL & WATER-7	GCID Monitoring Requirements / Violations	See attached documentation, Appendix 5
SOIL & WATER-8	Annual Water Use Summary	See attached documentation, Appendix 6
SOIL & WATER-9	Septic Tank	See attached documentation, Appendix 7
TLSN-3	Electro Magnetic Interference Complaints	See attached documentation, Appendix 8
VIS-1	Surface Treatment Report	See attached documentation, Appendix 9
VIS-3	Landscape Report	See attached documentation, Appendix 10
WASTE-5	Waste Management Plan	See attached documentation, Appendix 11

Pacific Gas and Electric Company®

Appendix 1, BIO-2

Colusa Generating Station (06-AFC-09C), California Energy Commission Annual Compliance Report, Biology Section, 2019

PREPARED FOR:	PG&E/TJ Gomez/Colusa Generating Station, Compliance Manager
COPY TO:	Jerry Salamy/Jacobs Project Manager
PREPARED BY:	Rick Crowe/Jacobs Colusa Generating Station CEC Designated Biologist
DATE:	January 20, 2020
PROJECT NUMBER:	D31321BA.A.CS.EV.TM.01

Introduction

This Colusa Generating Station (CGS) Biological Resources Annual Compliance Report, 2019 fulfills the California Energy Commission (CEC) requirement in the Verification for Condition of Certification (COC) BIO-2 Sub-section 8. "Designated Biologist Duties, BIO-2, Sub-section 8; The duties of the Designated Biologist are to maintain written records of the tasks specified above and those included in the Biological Resources Mitigation Implementation and Monitoring Plan, (BRMIMP). Summaries of these records shall be submitted in the annual compliance report.

The CGS was designed to avoid biological resources to the greatest extent feasible through development of mitigation and protection measures in consultation with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), Central Valley Regional Water Quality Control Board (CVRWQCB), and the CEC. The CEC's COC for the project requires Pacific Gas and Electric Company (PG&E) to designate a biologist to supervise compliance of mitigation measures outlined in the CEC-approved BRMIMP during CGS construction and operation. Applicable COCs were successfully complied with during construction and continue to be implemented during CGS's operation, including routine maintenance and outage events.

Project Location

The CGS site is located approximately 4 miles west of Interstate 5, 14 miles north of the farming community of Williams, and 72 miles north of Sacramento, adjacent to PG&E's Delevan Natural Gas Compressor Station on Delevan Road in Colusa County, California. The power plant site is located in the eastern half of Section 35, Township 18 North, Range 4 West, Mount Diablo Base and Meridian.

2019 Monitored Activities and Wildlife Interaction

PG&E has complied with the CEC's COC by directing the Designated Biologist (DB) to perform pre-disturbance surveys when necessary and on numerous occasions called on the Designated Biologist to capture and relocate wildlife that was encountered onsite or that was in harm's way or that could harm facility employees.

All new employees and contract workers working at the CGS received the CEC-approved Worker Environmental Awareness Training (WEAP) via video, an illustrated pamphlet as well as lecture and daily tailgate training with Jacobs Designated Biologist Rick Crowe (DB) or the PG&E CGS Compliance Managers Daryl Sattelberg and TJ Gomez (CGS CM). The DB remained on-call throughout the 2019 year.

The monitoring and compliance efforts for the year 2019 are documented in chronological order below and within Appendix A, Site Photos; 1 through 36.

2019 Executive Summary

Western diamondback rattlesnakes continued to be an issue during the 2019 compliance monitoring year but to a lesser extent than previous years. A total of 44 rattlesnake observations occurred; 12 of the rattlesnakes were observed and captured inside the CGS, 32 observations occurred outside of or adjacent to the CGS perimeter fencing. All of the observations occurred within the PG&E CGS parcel (+/- 100-acres). This is a significant reduction from the 2018 observations (total of 103 with 23 inside the facility and 80 on the outside perimeter). Several activities contributed to this reduction, including a reduction in water erosion around the switchyard that minimized snake denning habitat, and focused rattlesnake surveys conducted more frequently during the peak rattlesnake period. Additionally, PG&E installed new entry gates that minimize the openings along the sides and bottoms which eliminate a potential entry point for the rattlesnakes and other wildlife. PG&E has requested the DB and the CGS CM to closely monitor un-checked erosion along the switchyard perimeter to eliminate rattlesnake denning habitat. All rattlesnakes that were captured in 2019 were released approximately 2-miles southwest of the CGS unharmed.

In 2019, bat fatalities were again observed under the air-cooled condenser (ACC) structure and around the CGS site. The bat fatalities that were observed under the ACC during the weekly 2019 surveys included; 181 non-special status bats (Myotis sp. and Mexican free-tailed bats), 6 big brown bats and 5 red bats (CDFW Species of Special Concern). In comparison, in 2018 the bat fatalities that were observed included 403 non-special-status bats (Myotis sp. and Mexican free-tailed bats), 15 big brown bats and 5 red bats (CDFW Species of Special Concern). The bat fatalities are a concern of PG&E, CGS, and the CEC/CDFW. A meeting was held on June 13, 2019 at the CGS site and in attendance were representatives of the CEC, CDFW and PG&E with the purpose of the meeting to inspect the ACC and determine recommendations to further lessen the bat fatalities. A copy of the CEC Site Visit Report is included in Appendix B. At the request of the CEC and CDFW, 2 active acoustic bat surveillance surveys were conducted in an effort to determine how the bats are accessing the ACC. A copy of the "Results of Active Acoustic Bat Surveillance at Colusa Generating Station" report is also included in Appendix B. The surveys were inconclusive, but some important observations were made. First, bats were observed feeding off of the walkway lights on the outside of the ACC during both surveys and a hawk was observed entering the ACC through the gap between the ACC fans and the grates which are secured to the bottom of the fan plenum. The gap (approximately 11-inches wide) was screened on all 42 fan plenums during the months of November and December to eliminate this access point. Additionally, PG&E is reviewing the feasibility of replacing the existing exterior lights with LED lights which will allow the ACC lights to be turned off at night and only turned on when needed for maintenance or inspection. The DB will continue to monitor and report on site bat fatalities during the 2020 survey period.

January 10th, the DB was on site to attend a pre-season rattlesnake meeting. The meeting was for the discussion of rattlesnake preventiveness on site and to schedule an erosion survey along the slopes of the switchyard for early March after the rainy season. While on site the CGS maintenance crew removed an old ravens' nest (Corvus corax) from the east side of HRSG 1 (Photo 1). The nest was utilized unsuccessfully last year by a pair of ravens, it was removed to discourage them from attempting to nest there this year.

January 11th, the DB received an e-mail from the CGS CM Daryl Sattelberg stating that he had transferred to another division within PG&E and that he would no longer be covering the CM duties at CGS. In the interim until a replacement has been identified the DB will be coordinating wildlife interactions and observations with the CGS Maintenance Supervisor Dean Linville and CGS Operations Supervisor Josh Harris.

March 13th, the DB was on site to survey the switchyard slopes for erosion areas that will need backfilled prior to the 2019 rattlesnake season. Erosion was observed on all sides of the switchyard and the CGS Maintenance Supervisor was informed of the observations (Photos 2-5).

March 15th, the DB received an e-mail from CEC Staff Biologist Andrea Stroud concerning the increase in observed bat fatalities from 2017 to 2018. Ms. Stroud stated that she would be checking with the California Department of Fish and Wildlife (CDFW) to see if they had any additional recommendations for minimizing the take of bats. Ms. Stroud stated that she would be organizing a site visit together in the future with a CDFW representative and a bat biologist. The DB forwarded the e-mail to the CGS staff for feedback and input.

March 21st, the DB was on site to meet with a representative from Sierra Integrated Services Inc. to look at the mowing, disking, erosion back filling, and spraying of pre-emergent around the outside of the CGS facility for the coming year. Areas of concern were the erosion areas around the switchyard and then the mowing of the site perimeter for fire suppression. The DB informed Sierra Integrated Services Inc. that since the planned mowing and backfilling would be taking place during the spring bird nesting season that all areas planned for disturbance would need to be surveyed prior to disturbance. Also, while on site the DB surveyed under the ACC for bat carcasses (Photo 6). A total of 25 dried out and desiccated carcasses were observed; 22 Myotis sp. bat carcasses, 1 Mexican free-tail bat (Tadarida brasiliensis) and 2 red bats (Lasiurus blossevillii). These bat carcasses were probably fatalities from last year since it is early spring and bats have not been observed in the area yet.

March 29th, the DB was on site to conduct focused rattlesnake and general wildlife surveys. The DB surveyed both inside and outside of the site for rattlesnakes and none were observed. While conducting general wildlife surveys, 5 dead bat carcasses were observed under the ACC. The bat carcasses consisted of 5 Myotis sp. bats (Myotis sp.) and 1 big brown bat (Eptesicus fuscus). All of the carcasses appeared to be older and desiccated. The DB also observed a black phoebe nest (Sayornis nigricans) on a pipe in the blow down sump (Photo 7). CGS staff was informed of the observation and the sump area was flagged with red and white flagging to avoid disturbing the nest.

April 3rd, the DB was on site to conduct focused rattlesnake and general wildlife surveys. The DB searched the site inside and outside for rattlesnakes and none were observed. While on site the DB surveyed under the ACC for bat carcasses, none were observed.

April 9th, the DB received an e-mail from CGS management stating that CGS had hired a new Compliance Manager named TJ Gomez. Mr. Gomez would be the new point of contact for the DB.

April 10th, the DB was on site to conduct focused rattlesnake and general wildlife surveys. The DB searched the site inside and outside for rattlesnakes, the outside survey was negative. During the site survey the DB observed rattlesnake #1, a western diamondback rattlesnake (Crotalus atrox), just east of the CGS warehouse along the inside of the southern perimeter fencing (Photo 8). Also, while surveying the DB observed and captured a ring-necked snake (Diadophis punctatus) that was inside the CGS warehouse (Photo 9). Both snakes were safely captured and released off site. Additionally, the DB checked on a reported bird nest in the water treatment building roll up door. It appeared that the nest was a European starling (Sturnus vulgare) nest that was abandoned from last year, so the DB informed the operator that the nest was abandoned and could be removed. The DB also surveyed under the ACC for bat carcasses and none were observed.

The DB received an e-mail from CEC Staff Biologist Andrea Stroud requesting to set up a site visit in May 2019 to inspect and discuss the ACC and bat fatalities with a representative from CDFW and herself. The request for a site visit was forwarded to CGS management.

April 15th, received an early morning call concerning a rattlesnake (Rattlesnake #2) that was observed in the CGS the previous night. The plant operator on duty that night dialed the wrong number to contact

the DB, so the operator contacted the CGS Operations Manager who traveled to the site and safely captured the snake and placed it in the snake locker for the DB to release. The DB traveled to the site and conducted a focused rattlesnake survey inside and outside of CGS. No rattlesnakes were observed during the inside survey. Rattlesnake #3, a juvenile, was observed along the outside of the western perimeter fence. Rattlesnakes #2 and #3 were safely captured and released off site. While surveying the outside perimeter fence, a large western gopher snake (Pituophis catenifer) was observed caught up in some exposed geotech material on the eastern side of the switchyard (Photo 10) in one of the new erosion areas. The DB freed the gopher snake and removed the erosion material from the bank for disposal. The DB observed a dead Myotis sp. bat near the CGS warehouse that appeared to have been predated by a hawk or owl. The body of the bat was eaten away, and the wings and feet were all that remained of the bat. The DB observed 3 desiccated Myotis sp. bats under the ACC that were probably carcasses from last year that had just fallen from the ACC since the last survey was conducted. The DB confirmed that the CGS operators had the correct DB phone number, provided a back-up number, and provided a contact number for the biological monitor. These contact numbers were posted in in the control room.

April 16th, the DB received information back from CGS management regarding the CEC's request for a site visit in May to discuss the 2018 bat fatalities from the ACC. CGS management was concerned that the proposed site visit coincided with a planned outage for routine maintenance and upgrades and suggested an alternate date in June. This information was forwarded to the CEC.

April 18th and 19th, the DB was on site to conduct per-disturbance surveys for nesting birds prior to fire suppression mowing and weed eating around the facility. The DB was assisted by Jacobs Biologists Steve Long and Gary Santolo. Meandering transect searches were made of the proposed mowing areas with emphasis on nesting birds or denning animals. On the 18th, rattlesnake #4 for the year (a juvenile) was observed along the outside of the western perimeter fencing. The rattlesnake was safely captured and released off site. On the 19th, 2 redwing blackbird (Agelaius phoeniceus) nests were observed in tall vegetation - black mustard (Brassica nigra) - within the triangle field that is just southeast of the CGS main gate (Photo 11). The nesting area was flagged for avoidance by the mowing crew. Also, on the 19th the DB observed captured and relocated a large rattlesnake, #5 for the year (Photo 12). No other nesting birds or denning animals were observed within the planned mowing areas.

April 20th, the DB received a call from the CGS operator concerning the observation of a juvenile rattlesnake #6 in the snake U-turn and pit trap at the west gate. The DB traveled to the site and safely captured and relocated the rattlesnake off site. While on site the DB searched inside and outside of the CGS facility for additional rattlesnakes, none were observed.

April 22nd, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and survey under the ACC for bat carcasses. No rattlesnakes or bat carcasses were observed.

April 23rd and 24th, the DB was on site to monitor the fire suppression mowing and weed eating. The 2 redwing blackbird nests that were observed on the 19th were avoided by the mowing and no new nests were observed. The DB observed rattlesnake #6 (a juvenile) inside the facility along the western perimeter fence and a second rattlesnake #7 (also a juvenile) was observed under a traffic safety cone on the north slope of the switchyard. Both rattlesnakes were safely captured and relocated off site. On the 24th the DB observed, captured, and relocated a green racer (Coluber constrictor) that was observed by the mowing crew along the southern perimeter of the facility (Photo 13).

April 26th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and survey under the ACC for bat carcasses. During the survey inside the facility, the DB observed

a juvenile rattlesnake #9 in the gravel area in the southwest corner. The DB observed rattlesnake #10 under an orange traffic cone on the eastern slope of the switchyard while surveying the outside of the facility. On the west side of the switchyard, the DB observed rattlesnake #11 under a board placed to provide the snakes a makeshift denning space and to ease the capture. All 3 rattlesnakes were safely captured and relocated off site. Other objects, traffic cones and snake boards, were placed around the exterior of the facility in early spring to ease capture of rattlesnakes before they enter the facility. Signs were placed above the boards and cones with a warning about the potential venomous snake hazard associated with disturbing the cones/boards.

Also, during this survey 10 Myotis sp. bat carcasses were observed under the ACC. The DB observed the carcasses were older and desiccated.

April 29th, the DB was on site to conduct focused rattlesnake surveys inside and outside of the facility. During the outside survey the DB observed, captured, and relocated a large gopher snake that was by the entrance to the facility. During the inside facility survey the DB received a call from CGS personnel concerning the observation of rattlesnake #12 (a juvenile) located under a traffic safety cone near the anhydrous ammonia tank (Photo 14). The rattlesnake was safely captured and release off site.

May 2nd, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the CGS facility and survey under the ACC for bat carcasses. The inside the facility survey was negative. Outside of the facility, the DB observed 4 rattlesnakes. Rattlesnake #13 was located along the southern perimeter fence, rattlesnake #14 was observed under a snake board in the southeast corner of the switchyard, rattlesnake #15 was also observed under a snake board in the northwest corner of the switchyard, and rattlesnake #16 was observed in an erosion pocket along the southern perimeter fence. All 4 rattlesnakes were safely captured and relocated off site. While onsite, the DB observed 2 Myotis sp. bat carcasses under the ACC. These carcasses were older and dried out.

May 5th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. No snakes were discovered inside the facility. The DB observed a dead rattlesnake (#17) along the outside of the western switchyard fence. No other rattlesnakes were observed.

May 7th, the DB received a call from the CGS Maintenance Supervisor concerning the observation of several bird chicks observed in a square tube pipe support on the east side of HRSG 1. The DB had the supervisor take pictures of the chicks for identification by the DB (Photo 15). The DB determined that the chicks were young American kestrels (Falco sparverius). Since the pipe support area was not an active work site, the area was flagged as a nesting bird area and the workers were instructed to stay out of the area.

May 8th, the DB received a call from the CGS Maintenance Supervisor concerning a juvenile rattlesnake (#18) observed by a contractor trailer. The Maintenance Supervisor safely captured the rattlesnake and placed it in the rattlesnake cabinet in the CM's office. The DB traveled to the site and surveyed inside and outside the facility for additional rattlesnakes, none were observed. The DB safely released the rattlesnake off site. While surveying the site, the DB received a call from a PG&E safety representative concerning two wildlife discoveries. The first discovery was in a junction box near the steam turbine that contained numerous European starling carcasses (Photo 16). The DB removed the carcasses and the openings in the junction box were sealed to keep birds from nesting inside. The second observation was of a Say's phoebe (Sayornis saya) nest in the stairwell to the blow down sump (Photo 17). The stairwell was flagged with safety tape and the staff was alerted to the nest location.

May 9th, the DB received a call concerning the observation and capture of Rattlesnake #19 (a juvenile) located in the gas yard. The snake was placed in a locked cabinet and arraignments were made for the DB to release it the next day during weekly planned rattlesnake surveys.

May 10th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to release the rattlesnake that had been captured on the previous day. No snakes were discovered inside the facility. The DB observed rattlesnake #20 on the north slope outside of the switchyard. Rattlesnakes #19 and #20 were safely released off site. While surveying for rattlesnakes, the DB observed a ring-necked snake in the snake pit fall trap at the front gate and a gopher snake was observed in the warehouse. Both snakes were safely captured and released off site.

May 13th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. No snakes were discovered inside the facility. The DB observed a dead adult rattlesnake #21 along the outside of the southern perimeter fencing. No other rattlesnakes were observed.

May 15th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. No rattlesnakes were observed outside of the facility. Rattlesnake #22 was observed near the parts washing equipment (Photo 18). The DB safely captured the snake and released it off site. The bat carcass survey under the ACC was negative.

May 17th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The bat carcass survey under the ACC was also negative.

May 20th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. The outside and inside the facility rattlesnake surveys were negative.

May 21st through 24th, the DB was on site to oversee mowing and weed removal for fire suppression. On the 21st, Rattlesnake #23 (a juvenile) was observed by an employee just south of the water treatment building at the base of a large water tank. The DB conducted rattlesnake surveys, with no additional rattlesnakes discovered within the facility. The DB observed rattlesnake #24 outside the facility on the east slope of the switchyard in an erosion pocket. Rattlesnakes #23 and #24 were safely released off site. The DB also surveyed under the ACC for bat carcasses during this period, none were observed. On the 23rd while monitoring the weed removal, the DB observed a large gravid female rattlesnake #25 on the east slope of the switchyard. Later in the day on the 23rd the DB observed rattlesnakes #26 and #27 while monitoring the weed removal along the waterline access road. All 3 adult rattlesnakes were captured and safely relocated off site. On the 24th, the DB observed rattlesnake #28 a large gravid female along the main access road to the facility in front of the weed removal crew. Rattlesnake #29 was observed on the east slope of the switchyard. All rattlesnakes were safely captured and relocated off site.

May 28th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The bat carcass survey under the ACC was also negative.

May 30th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The bat carcass survey under the ACC was also negative. Also, the DB received conformation from the CEC on a site visit scheduled for June 13th to look into the bat fatalities and the ACC.

June 4th, the DB was on site to oversee disking of a 200-foot wide swath for fire protection around the outside of the facility and to conduct rattlesnake surveys inside and outside of the facility. During the outside survey, rattlesnake #30 (a large adult) was observed along the northern perimeter fence of the switchyard. It was safely captured and relocated off site. Rattlesnake #31 (a juvenile) was observed dead along the western perimeter fence (it was disposed of). During the disking, several large gopher snakes were observed along the outside of the western perimeter fence. Also, of note, approximately 1/3 of the rattlesnake basking boards and cones that are placed along the outside perimeter fence had been uprooted by wild pigs (Sus scrofa). Several feral pigs have been observed around the site recently by staff. Also, while on site the DB surveyed for bat carcasses under the ACC and none were observed.

June 7th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The inside survey was negative. The DB observed a dead juvenile rattlesnake #32 along the outside of the western perimeter fence. During the bat carcass survey the DB observed 1 big brown bat carcass under the ACC, the carcass was older and dried out.

June 11th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. During the outside survey a large gravid female rattlesnake #33 was observed in the snake fence U-turn at the back CGS gate (Photo 19). No other rattlesnakes were observed outside of the facility. Rattlesnake #34 was observed inside the CGS warehouse (Photo 20). Both rattlesnakes were safely captured and released off site. 3 Myotis sp. bat carcasses were observed under the ACC (Photo 21). All 3 carcasses appeared to be older and dried out.

June 13th, the DB was on site to attend the ACC bat meeting with CGS Management, CEC, CDFW and PG&E Staff Biologist Amy Kirsch. A complete Site Visit Report from the CEC is in Appendix B of this report. Based on the site visit discussions the DB will begin supplying the CEC with weekly updates on the bat carcasses observed, the condition of the bat carcasses (older versus fresh carcasses) and a location map from each survey on where the bat carcasses were observed. Additionally, CGS will conduct 2 nights of active acoustic bat surveys to attempt to identify where and how the bats are accessing the ACC. The results of the 2 nighttime surveys along with recommendations are included in Appendix B Results of Active Acoustic Bat Surveillance.

Also, while on site the DB conducted focused surveys for rattlesnakes inside and outside of the CGS facility and to survey for bat carcasses under the ACC. The inside the plant survey for rattlesnakes was negative. During the outside survey; rattlesnake #35 (a large adult) was observed under a board on the west side of the switchyard. Rattlesnake #36 (a medium sized adult) was observed under a board along the western perimeter fence opposite of the ACC (Photo 22). A dead rattlesnake (#37 a medium sized adult) was observed along the southern perimeter fence. The 2 live rattlesnakes were safely captured and relocated off site. The dead rattlesnake was disposed of.

June 17th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. While surveying outside of the facility a juvenile wild pig was observed, the pig appeared to have been sleeping by a stormwater outfall pipe on the north slope of the switchyard. Numerous adult wild pig tracks and pig wallows were also observed around the outside of the facility. The bat carcass survey under the ACC produced 4 older Myotis sp. carcasses and 1 fresh Myotis carcass.

June 21st, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. The outside and inside the facility rattlesnake surveys were negative.

June 24th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The bat carcass survey under the ACC was also negative.

July 1st, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. An older Myotis sp. carcass was observed under the ACC.

July 10th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside the facility rattlesnake survey was negative. The DB observed rattlesnake #38 in the southwest corner of the facility near a stack of pallets. The snake was safely captured and relocated off site. During the bat carcass survey the DB observed 1 live big brown bat, 1 dead big brown bat carcass, 1 dead Mexican freetail bat carcass, and 1 dead Myotis sp. carcass. All 3 carcasses were older and dried out. The live big brown bat was safely released off site (Photos 23 and 24).

July 17th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 1 dead big brown bat carcass, and 2 dead Myotis sp. carcass, all 3 carcasses were older and dried out.

July 24th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 15 Myotis sp. bat carcasses, 13 were fresh carcasses and 2 were older (Photo 25).

July 31st, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 1 fresh big brown bat carcass and 11 Myotis sp. carcasses (8 fresh and 3 older).

August 7th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 17 Myotis sp., 1 big brown and 1 red bat, 2 of the Myotis sp. carcasses were older the remainder of the carcasses were fresh.

August 14, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 8 Myotis sp. carcasses, 5 were fresh 3 were older and dried out.

August 20th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The inside the facility rattlesnake survey was negative. During the outside survey a dead rattlesnake (#39) was observed along the southern perimeter fencing. During the bat carcass survey the DB observed; 1 older Myotis sp. carcass.

August 28th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. While conducting the inside the facility rattlesnake survey the DB received a call from CGS personnel reporting the observation of a live bat in the ACC Power Distribution Center building (Photo 26). The DB attempted to capture the live bat (a big

brown bat), but it flew into an area where it could not be reached. The inside the facility rattlesnake survey was negative. The DB discovered a juvenile rattlesnake (#40) along the outside of the western fence under a board (Photo 27). During the bat carcass survey the DB observed; 11 Myotis sp. and 1 red bat. Five of the Myotis sp. were older and dried out and the remaining six carcasses were fresh.

September 4th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 10 Myotis sp. and 2 Mexican free tailed bat carcasses, 4 of the Myotis sp. carcasses appeared to have been older and the remaining 8 carcasses appeared to be fresh.

September 10th, the DB was on site to participate in the 1st of 2 nighttime acoustic surveys for bats. Survey results are in Appendix B, Results of Active Acoustic Bat Surveillance.

September 11th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. During the bat carcass survey the DB observed; 4 Myotis sp. carcasses and 1 red bat carcass, 3 of the carcasses appeared to have been older and 2 appeared to be fresh. The DB also observed, captured and safely released off site a life red bat. The bat was closely inspected for signs of illness or injury, but the bat appeared unharmed. The live red bat was safely released off site (Photo 28).

September 15th, the DB was on site to participate in the 2nd night of acoustic bat surveying. Survey results are in Appendix B, Results of Active Acoustic Bat Surveillance. While participating in the 2nd night bat acoustic survey the DB observed a dead Cooper's hawk (Accipiter cooperii) under the ACC (Photo 29). It appeared that the hawk had flown into the rotating ACC fans. This observation was also reported to PG&E's Avian Protection Plan which PG&E uses to track the take of migratory birds. PG&E submits an annual report which is required under the Federal Fish and Wildlife Permit that PG&E possess for limited take of migratory birds.

September 18th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The survey for bat carcasses was also negative. While surveying the site, the DB observed the installation of new gates at the front and back entrances (Photo 30). The new gates are constructed to minimize the access to the site by rattlesnakes and other wildlife.

September 27th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The inside snake survey was negative. The DB observed rattlesnake #41 (an adult gravid female) under a board in the southwest corner of the site (Photo 31). Also, rattlesnake #42 was observed along the outside of the western perimeter fence. Both snakes were safely captured and released off site. During the bat carcass survey under the ACC the DB observed 6 older Myotis sp. carcasses.

September 30th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. The outside and inside the facility rattlesnake surveys were negative.

October 4th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The DB observed 5 older Myotis sp. bats under the ACC.

October 8th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The DB observed 4 Myotis sp. bats under the ACC, 2 appeared to be fresh carcasses and 2 were older.

October 16th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The DB observed 5 Myotis sp. bat carcasses under the ACC, 1 appeared fresh and 4 were older.

October 24th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility and to survey for bat carcasses under the ACC. The outside and inside the facility rattlesnake surveys were negative. The DB observed 1 old Myotis sp. carcass, and 1 fresh Mexican free tail carcass under the ACC.

October 30th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. The inside the facility survey was negative, during the outside survey rattlesnake #44 was observed under a board in the southwest corner. The rattlesnake was safely captured and relocated off site. While surveying for snakes around the outside perimeter, the DB observed the snake fencing becoming separated from the chain link fence (Photo 32). The CGS Maintenance Supervisor was informed of the potential breaches in the snake fencing and repair was scheduled for the next day. The DB observed 5 older Myotis sp. bats and 1 older Mexican free tail carcass under the ACC.

November 11th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside of the facility. The outside and inside rattlesnake surveys were negative. The DB observed 2 older and 1 fresh Myotis sp. bats under the ACC. While surveying under the ACC, the DB observed a contractor adding bat screening to the ACC fan plenums (Photos 33 and 34). The bat screening is being added to each ACC fan to attempt to prevent bats and birds from entering the ACC and becoming trapped.

November 19th, the DB was on site to conduct focused surveys for rattlesnakes inside and outside the facility. The outside and inside rattlesnake surveys were negative. The DB covered the 4 snake pit traps with lids and removed the boards and traffic cones (placed along the perimeter fencing) for the winter season (Photo 35). During the bat carcass survey under the ACC the DB observed 3 older Myotis sp. and 1 older Mexican free tail bat carcasses.

December 11th, the DB received notification from PG&E that PG&E Biologist Amy Krisch had been approved by the CEC as an Alternate Designated Biologist for CGS.

December 16th, the DB was on site for a final 2019 survey for bat carcasses under the ACC and to check on the installation of the screening around the fan shrouds. During the bat carcass survey under the ACC the DB observed; 7 old Myotis sp. bat carcasses. To date there have been a total of 192 bat carcasses observed under the ACC they include; 174 Myotis sp., 7 Mexican freetails, 5 red bats, and 6 big brown bats. Additionally, 2 live bats were observed and released safely off site in 2019.
While on site the DB went in the ACC building and quickly surveyed each street and each cell from the man walks. The observations made in the ACC included an average of 4 to 6 bat carcasses per cell (Photo 36), also observed was approximately 28 pigeon carcasses (Columba livia), 3 European starling carcasses, and 1 ring necked dove (Streptopelia capicola) carcass. No raptor carcasses were observed. There appeared to have been 4 cells that still needed the new screening attached during this visit.

December 21st, the DB was informed that the plenum gap screening was completed on 12-21-19 and that the ACC is scheduled to be cleaned out after the first of the year.

Conclusion

The Colusa Generating Station was in compliance with all biological mitigation and protection measures covered in the BRMIMP that are applicable to this operating facility during the year 2019.

Appendix A
Site Photos

Photo 1, photo of old raven nest material after removal from side of HRSG 1, 1/10/19.

Photo 2, photo of erosion as observed in northeast corner of detention pond, 3/13/19.

Photo 3, of erosion area east of switchyard as observed, 3/13/19.

Photo 4, of erosion under and through perimeter fence east side of switchyard, 3/13/19.

Photo 5, of erosion area north slope of switchyard, 3/13/19.

Photo 6, bat carcasses observed under the ACC, 3/21/19.

Photo 7, of black phoebes nest with eggs as observed in blowdown sump, 3/29/19.

Photo 8, Rattlesnake #1 observed just east of CGS warehouse within the CGS facility, 4/10/19.

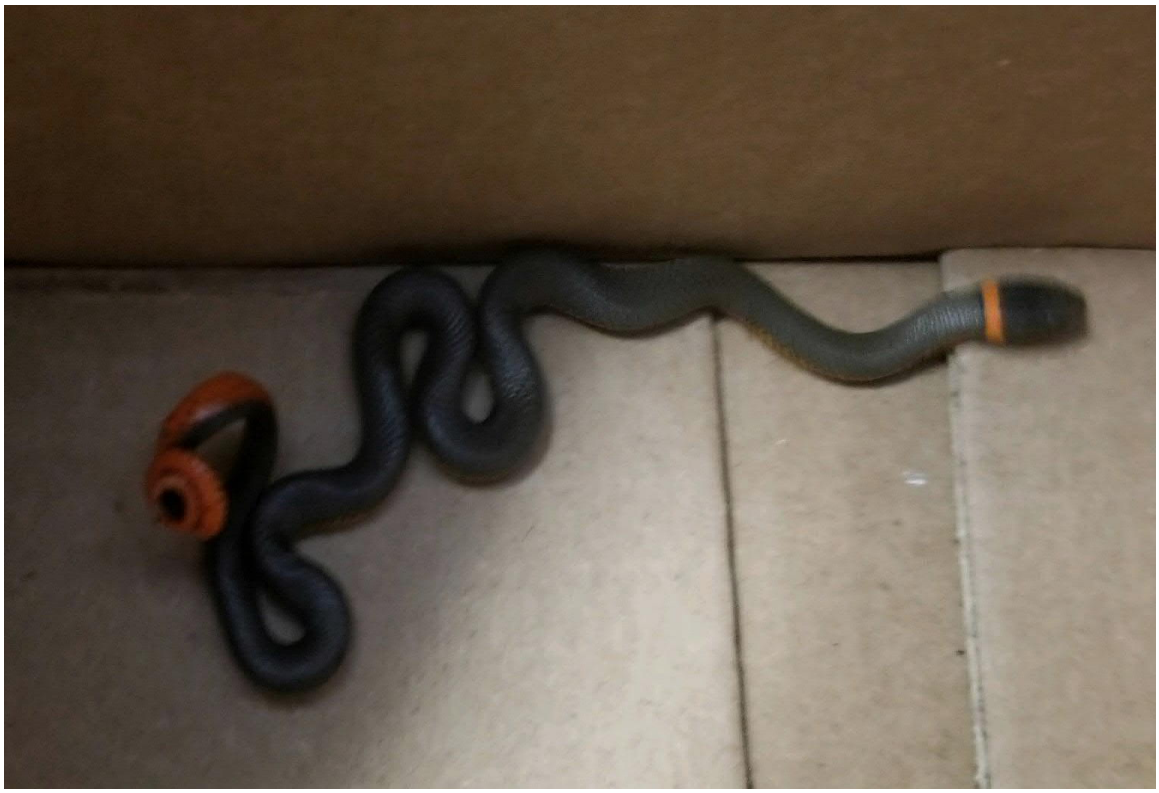

Photo 9, of ring neck snake prior to safe release off site, 4/10/19.

Photo 10, of gopher snake prior to safe release, observed in erosion pocket, 4/15/19.

Photo 11, of redwing blackbird nest observed in triangle area prior to mowing for fire suppression, 4/19/19.

Photo 12, large western diamond back rattlesnake #5 observed during mowing pre-disturbance surveys, 4/19/19.

Photo 13, of green racer observed by mowing crew along southern perimeter fencing, 4/24/19.

Photo 14, of rattlesnake #12 observed under orange traffic cone within the CGS facility, 4/29/19.

Photo 15, of juvenile American kestrels observed within a support pipe on HRSG 1, 5/7/19.

Photo 16, of dead European starlings observed in a junction box associated with steam turbine, 5/8/19.

Photo 17, of Say's phoebe nest observed in stairwell to blow down sump, 5/8/19.

Photo 18, of juvenile rattlesnake #22 observed by parts washer just west of maintenance shop, 5/15/19.

Photo 19, of large gravid female rattlesnake #33 observed in snake fence U-turn at back gate, 6/11/19.

Photo 20, of an adult rattlesnake #34 as observed within the CGS warehouse, 6/11/19.

Photo 21, of 3 Myotis sp. bat carcasses observed under the CGS ACC, 6/11/19.

Photo 22, of juvenile rattlesnake #36 observed under snake board along western perimeter fence, 6/13/19.

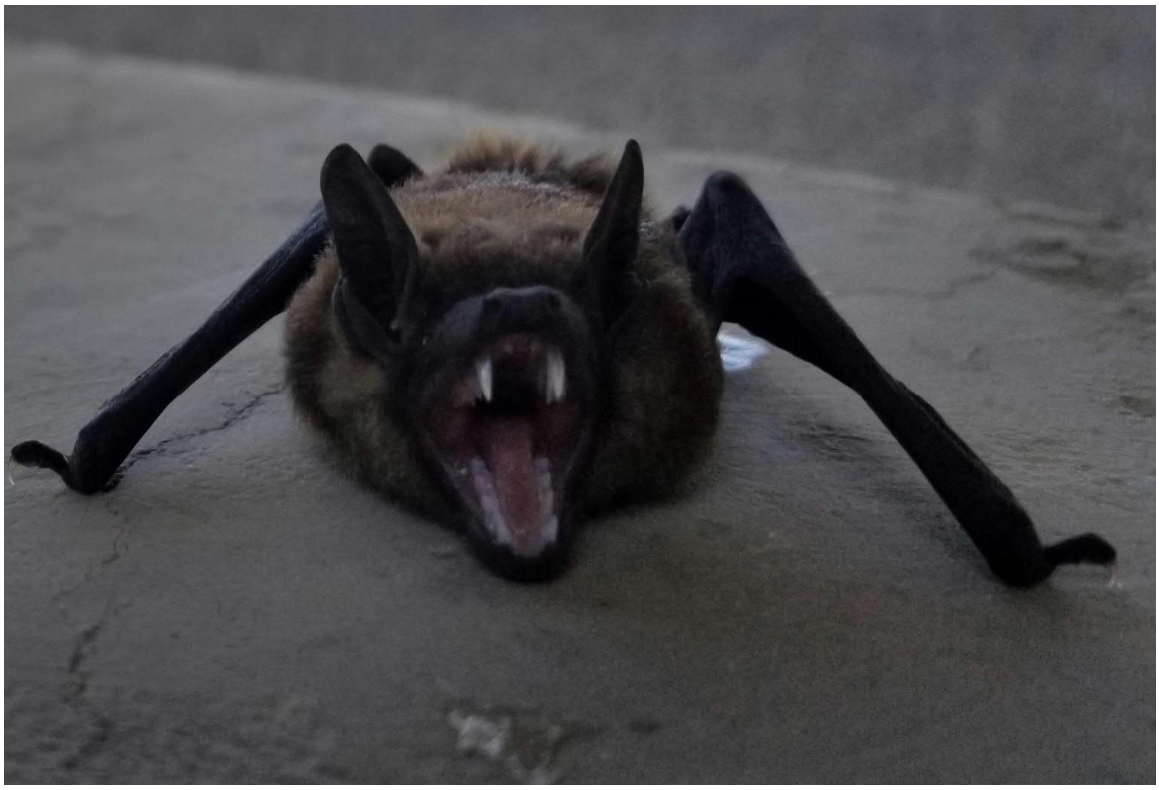

Photo 23, of big brown bat observed alive under the ACC, 7/10/19.

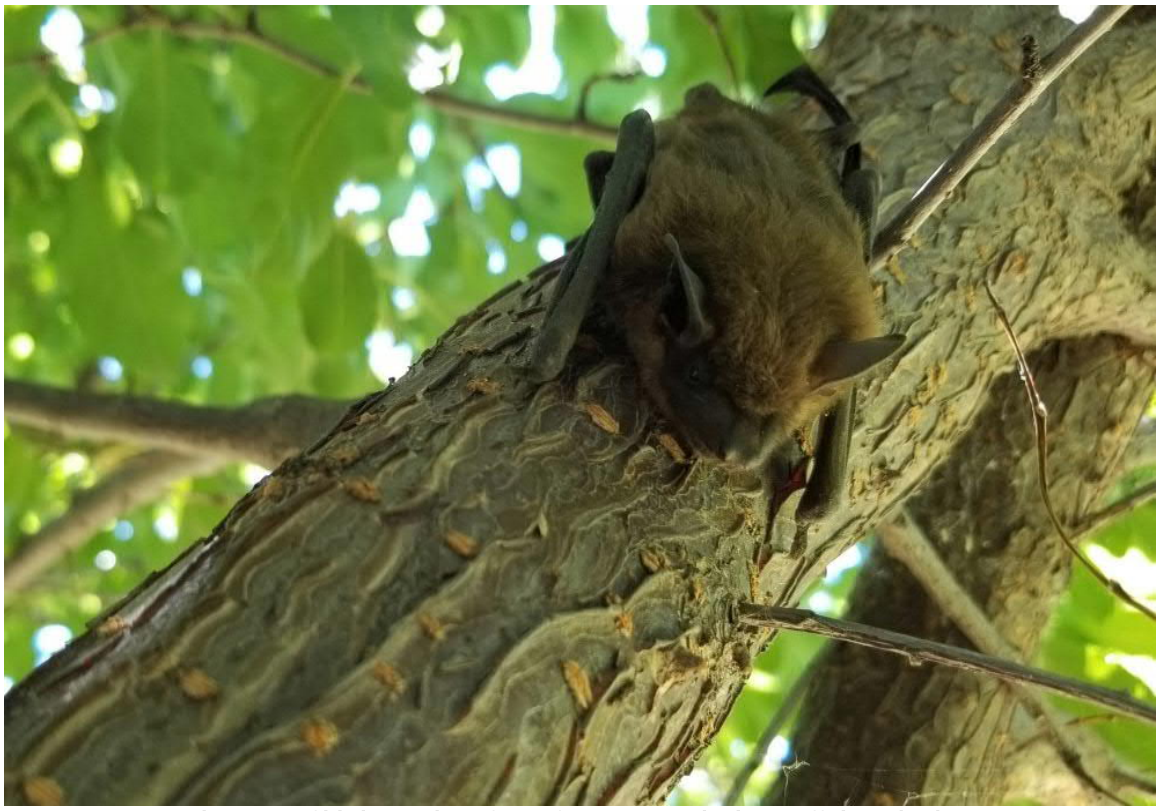

Photo 24, of big brown bat after safe capture and release off site, 7/10/19.

Photo 25, of 13 fresh Myotis sp. carcasses observed under ACC during bat carcass survey, 7/24/19.

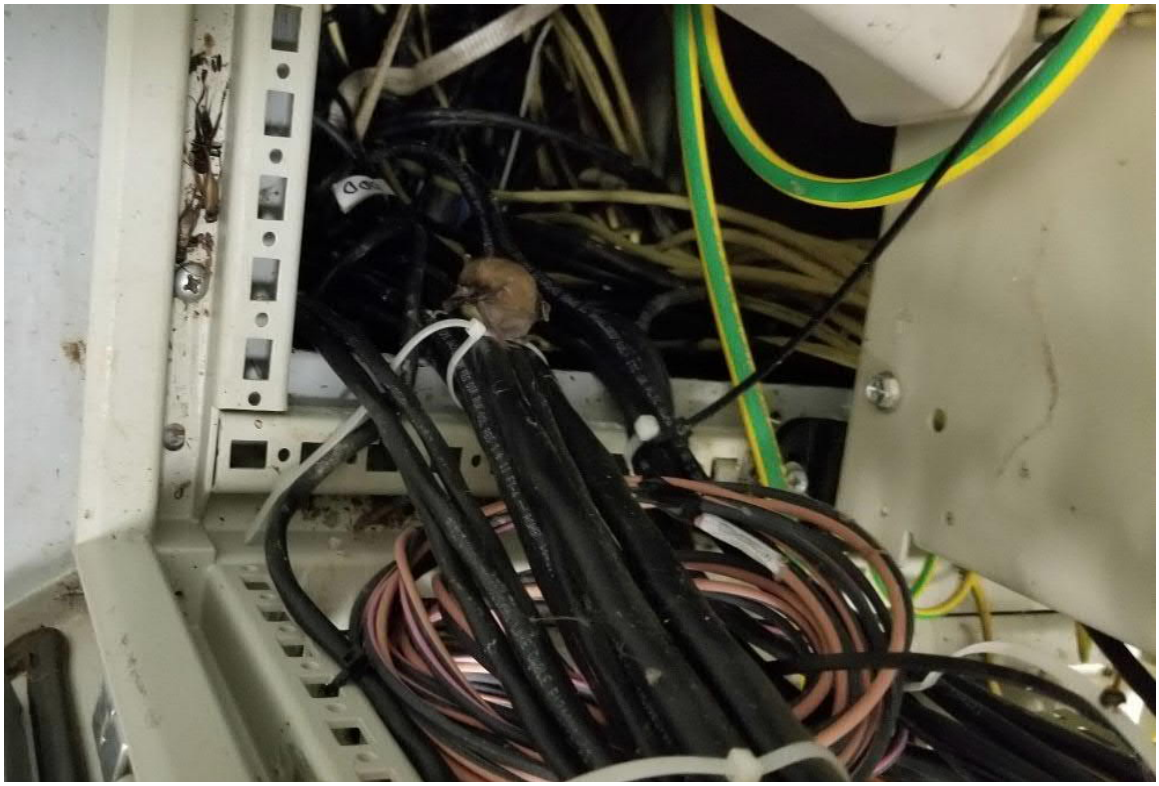

Photo 26, of big brown bat as observed inside a control computer within the ACC PDC room, 8/28/19.

Photo 27, of juvenile rattlesnake #40 as observed under a snake board along western fence line, 8/28/19.

Photo 28, of live red bat as observed under ACC and prior to safe release, 9/11/19.

Photo 29, of dead Cooper's hawk as observed under the ACC, 9/15/19.

Photo 30, of installation of snake proof gate at the CGS back gate, 9/18/19.

Photo 31, of adult rattlesnake #41 as observed under a board placed along the outside southern CGS perimeter fencing, 9/27/19.

Photo 32, of snake fencing falling off perimeter fence after high wind event, 10/13/19.

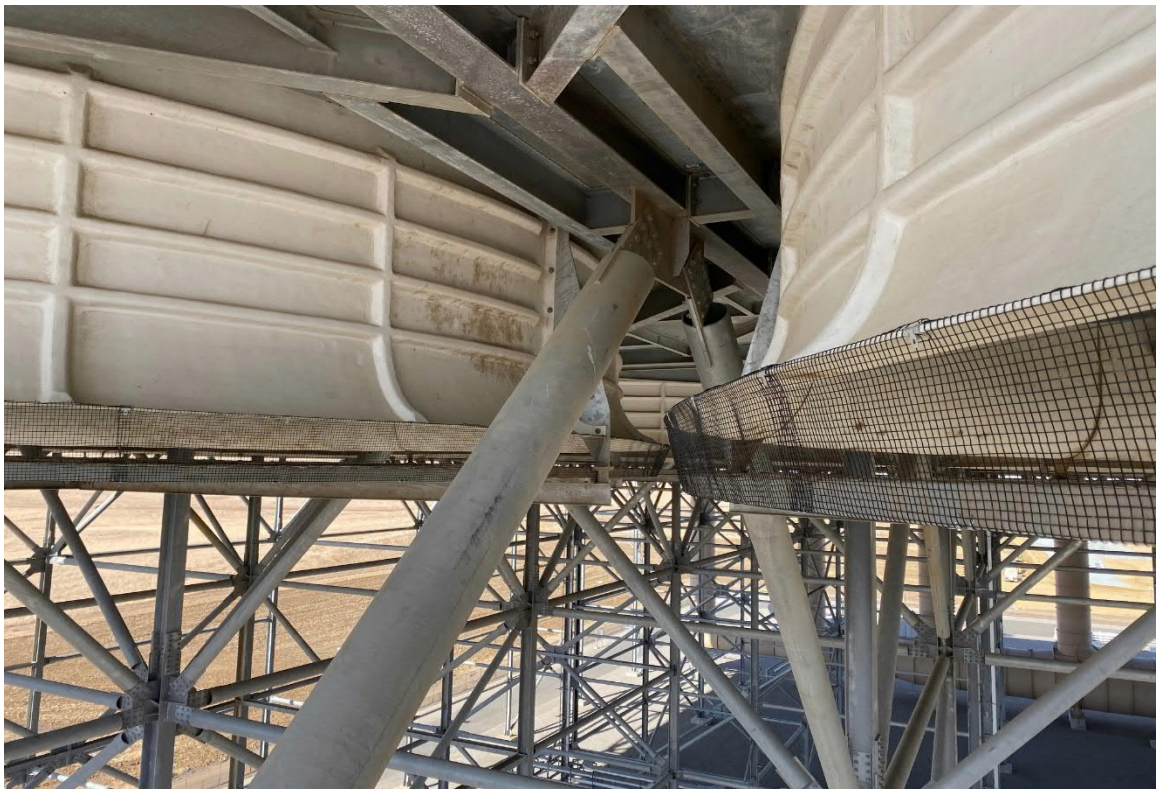

Photo 33, of screening installed around fan plenum base to exclude birds and bats from ACC, 11/11/19.

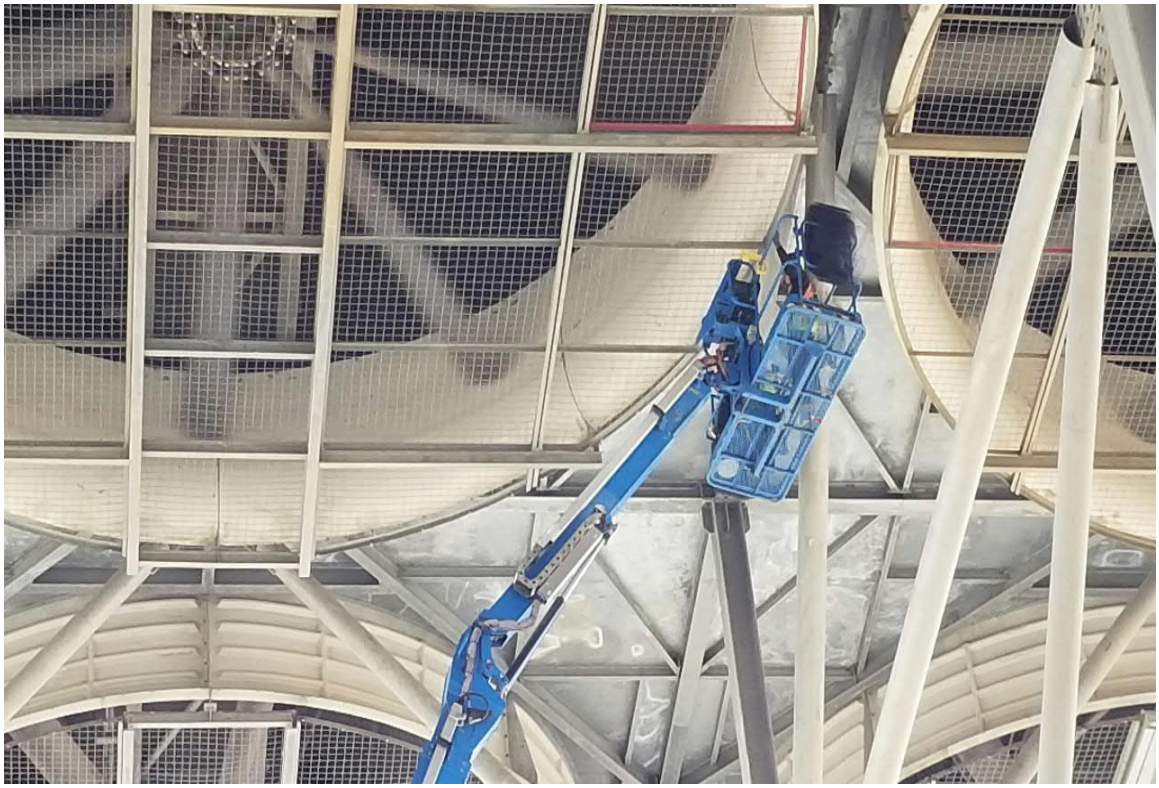

Photo 34, of contractor installing screening on ACC fan plenums, 11/11/19.

Photo 35, of snake pitfall trap with lid in place for winter, 11/19/19.

Photo 36, of inside an ACC cell, blue circles represent bat carcasses as observed on floor of ACC, 12/16/19.

Appendix B

CEC Site Visit Report on Bats and CGS ACC

Results of Active Acoustic Bat Surveillance at Colusa Generating Station

Siting, Transmission, and Environmental Protection Division

Site Visit Report

PROJECT INFORMATION

DOCKET NO.	06-AFC-09C
PROJECT NAME	Colusa Generating Station
PROJECT LOCATION	4780 Dirks Rd, Maxwell, CA 95955
SITE VISIT DATE/TIME	June 13, 2019 – 9:30 a.m. to 12:00 p.m.
COMPLIANCE PROJECT MANAGER	Anwar Ali
SITE VISIT REPORT NUMBER	06-AFC-09C _ 20190613

ENERGY COMMISSION STAFF

NAME	TITLE
Jon Hilliard	Biological Resources Unit Supervisor
Anwar Ali	Compliance Project Manager
Andrea Stroud	Staff Biologist

PROJECT OWNER PARTICIPANTS

NAME	TITLE	COMPANY	PHONE	EMAIL
Joshua Harris	Operations Supervisor	PG&E	530-356-7280	JVHA@pge.com
TJ Gomez	Compliance Manager	PG&E	530-934-9007	AJGU@pge.com
Dean Linville	Maintenance Supervisor	PG&E	530-682-6325	D2LD@pge.com
Amy Krisch	Senior Wildlife Biologist	PG&E	925-415-6843	ALKB@pge.com
Rick Crowe	Designated Biologist (DB)	Jacobs	916-296-5525	Richard.Crowe@jacobs.com

REASON FOR SITE VISIT (CHECK ONE)

☐ Operations Compliance Audit ☐ Complaint Inspection ☐ Emergency / Incident Response

☐ Construction[1] or Demolition ☐ Follow-up ☒ Other

POWER PLANT CHARACTERISTICS

Colusa Generating Station (CGS) is a 660-megawatt natural gas fired combined cycle facility located in an unincorporated area of Colusa County, six miles north of the community of Maxwell. The project was certified by the Energy Commission on April 23, 2008; and construction was initiated on October 2, 2008.

Previous site visits by Energy Commission staff include the following:

- March 28, 2017 – Routine scheduled inspection.
- November 8, 2011 – Post-construction inspection and fence installation.
- December 1, 2010 – Construction progress/Preparation for commercial operation.

PURPOSE OF SITE VISIT

The stated purpose of the staff site visit was to observe the cells of the air-cooled condenser (ACC) and the location where Designated Biologist Rick Crowe found dead and desiccated bats[2] as reported in the 2018 Annual Compliance Report. Energy Commission staff (staff) invited Scott Osborn, a bat biologist with California Department of Fish and Wildlife, to observe the site and help determine any necessary course of action to help reduce the bat mortality.

SITE VISIT AGENDA

- 9:30 a.m. to 9:35:a.m.; Opening Conference.
- 9:35:a.m. to 10:00 a.m.; WEAP and initial health and safety briefing.
- 10:00 a.m. to 10:25 a.m.; Summary of bat fatalities from 2016 until today.
- 10:25 a.m. to 11:40 a.m.; Inspection of the ACC units.
- 11:40 a.m. to 12:00 p.m.; Closing Conference.
- 12:00 p.m.; Leave project site.

[1] Construction includes initial project construction, petition and non-petition construction.

[2] 423 dead bats were found on the CGS site during year 2018, the majority of these at the ACC.

OPENING CONFERENCE

Andrea Stroud held the opening conference and stated the purpose of the staff site visit. The purpose was to see the ACC with PG&E on-site compliance staff and CDFW's bat biologist to get a better understanding of where the bats were found within the ACC, why Rick Crowe found dead desiccated bats inside the ACC cells, and what measures could be taken to reduce the observed bat deaths. Rick Crowe led a discussion on his observations and opinions on the source and cause of increased bat fatalities. He believed that the switch from rice cultivation to walnut groves on agricultural land to the south created attractive habitat for bats, and a substantial daytime roost was discovered in a barn within a mile of the CGS. Mr. Crowe's hypothesis is that nocturnally-feeding bats enter the ACC, get trapped in the fan wells by the rotating fan blades, and then either halt in place and get desiccated. Rick Crowe also referenced the August 2016 report (Attachment B) prepared by Heather Johnson (Garcia and Associates) for PG&E containing a bat habitat assessment on the CGS and management recommendations. Some of the report recommendations were implemented during 2018 and Mr. Crowe noted there has been a discernable decrease in detected mortalities between 2017 and 2018.

STAFF OBSERVATIONS & INTERVIEWS

Josh Harris provided WEAP and PPE training to staff prior to the walking tour.

Rick Crowe and Josh Harris led staff and CDFG bat biologist on a walking tour to the ACC and up into the cells that make up the ACC above the fans. As staff climbed the stairs to reach the cells, the barn came into full view. While ascending the stairs towards the ACC, Rick Crowe stopped to point out the doors that lead to the cells where the bats night roost. Rick Crowe led everyone into the first cell, which did not have the ACC fan on. The space was quite warm but as we moved into the next cell the air temperature was much cooler because the fan was on. Rick Crowe pointed out to the walls with the fins where the bats "hunker down" when the fan comes on. Dead and desiccated bats were on the floor next to the fans in several of the cells. Rick Crowe noted that in order to collect the desiccated bats the fan must be off and with the help of another individual, he is tethered for security while stepping off the walkway to collect the bat carcasses below. Once the group exited the cells and the catwalk on the other side, Rick Crowe pointed out where a resident nesting great horned owl has predated other young birds that were still nesting. We returned by way of maintenance walkway where Rick Crowe has looked for bats and guano around the many boards that are stacked along the exterior roof wall. He has never seen any bats or guano in these areas. This maintenance area has no extended roof. After leaving the ACC, the group headed back to the main office.

Photographs taken during the site walk at Project.

Photograph 1: Exterior view of ACC, on north side of site, facing east towards the ACC

IMG_0172.JPG; 6-13-2019; Andrea Stroud

Photograph 2: Closer view of fans and grates of the ACC

IMG_0170.JPG; 6-13-2019; Andrea Stroud

Photograph 3: Closer view of fan and grate. Note gap between fan housing and grate

IMG_0171.JPG; 6-13-2019; Andrea Stroud

Photograph 4: Inside ACC cell looking at wall where bats hold on at night and roost

IMG_0165; 2-13-2019; Andrea Stroud

Interviews / Discussion

Staff conferred with the following individuals:

- Rick Crowe, Designated Biologist, Jacobs
- Scott Osborn, Wildlife Biologist (Bat Biologist), CDFW

During the site visit, Scott Osborn discussed opening cells to allow free movement of bats between cells and to the exterior. Rick Crowe discussed resident great horned owl nest on top of ACC and the owl's predation of nesting Kestrels and other birds. In addition, Mr. Crowe mentioned looking for bats and guano between several sheets of plywood present in the maintenance corridor of the ACC, however none has been found.

CLOSING CONFERENCE

Scott Osborn provided his preliminary conclusions and recommendations (Attachment C).

1) The hypothesis is that bats are entering the ACC cells, probably while the fan is off, then are either trapped in place and starve or are impacted and desiccated by the running fan is credible.
2) Additional field work could shed light on this hypothesis:
    a. Active acoustic surveillance to help identify which entrances the bats are using. Do the surveillance during the evening when the ACC fans are mostly off and may require more than one night. The goal is to determine where specifically the bats are accessing the building so that exclusion options can be considered.
    b. Map bat carcasses picked up from underneath the ACC on a grid representing the fan cells layout. Also, record each cell's fan activity during the period since the previous carcass survey. Record whether each cell's fan was continuously off, continuously on, or cycling off/on during the period preceding the survey.
3) Depending on the results of the additional field work, here are some possible remedies:
    a. Additional exclusion structures;
    b. Increase opportunities for escape from a cell when the fan turns on; and
    c. Hazing prior to turning the fan on.

CONCLUSION

Staff observed dead bats in a few of the ACC cells. Cells are very warm when the fan is not on and considerably cooler when the fan is on. Maintenance walkway is open to the outside and there are no signs of bat use.

ACTION ITEMS / FOLLOW UP

Project Owner Action Items

1. Rick Crowe will collect more detailed information on the access of bats to the ACC units and record bat mortalities. Rick Crow will provide Andrea Stroud a weekly survey report that includes a map identifying the ACC cell(s) where dead bats were found and indicate whether the fans were on or off during his surveys.

2. Rick Crowe will begin active acoustic monitoring with help from Heather Johnson, a bat expert with Garcia and Associates. Results of the acoustic survey will be submitted to Andrea Stroud. This will occur once fresh bat carcasses are found.

3. Amy Krish will debrief Laura Burkeholder (PG&E Senior Wildlife Biologist) and get Heather Johnson in contract to assist with Rick Crowe's work. (June 2019).

Staff Action Items

1. Continue to review the weekly wildlife reports from Rick Crowe.

ATTACHMENT(S):

- Attachment A: Photograph Log.
- Attachment B: 2016 Bat Survey Report prepared by Heather Johnson (Garcia and Associates).
- Attachment C: Meeting Summary Prepared by Scott Osborn, CDFW.

SIGNATURES	
Christine Root	7/24/19
Christine Root, Compliance Office Manager	Date
	7/24/2019
Compliance Project Manager	Date

ATTACHMENT A

Digital Image Log

1. Project Name: 06-AFC-09C	**2. Inspector Name:** Andrea Stroud		
3. Date of Inspection: 6/13/19	**4. Company Name:** Colusa Generating Station		
5. Street Address of Digital Images: 4780 Dirks Rd	**6. City:** Maxwell	**7. State:** CA	**8. Zip:** 95955
9. Image Numbers: MVI_0158.MP4-IMG_0172.JPG	**10. File Name (if any):** 6-13-19-CGS-Site Visit-Photos		

Digital Image Number	Location	Description of Digital Image	Date and Time Digital Image Taken
MVI_0158.MP4	South side of power plant	View of ACC from gate.	6/13/19 9:13 am PST
MVI_0159.MP4	West side of ACC	View of ACC including ground underneath.	6/13/19 10:33 am PST
MVI_0160.MP4	West side of ACC on stairwell	View of ACC fans running and not running.	6/13/19 10:35 am PST
MVI_0161.MP4	West side of ACC on stairwell	Close up view of fans.	6/13/19 10:41 am PST
MVI_0162.MP4	West side of ACC on catwalk	View of barn where bat have a daytime roost.	6/13/19 10:42 am PST
MVI_0163.MP4	West side of ACC on catwalk	View of space between fan housing and grate.	6/13/19 10:42 am PST
MVI_0164.MP4	Inside cell of ACC	View of wall where bats hang on in cell.	6/13/19 10:46 am PST
IMG_0165.JPG	Inside cell of ACC	View of wall where bats hang on in cell.	6/13/19 10:47 am PST

IMG_0166.JPG	Inside cell of ACC	View of grate from in cell looking down to ground below.	6/13/19 10:48 am PST
IMG_0167.JPG	Inside cell of ACC	View of grate from in cell looking down to ground below.	6/13/19 10:48 am PST
IMG_0168.JPG	East side of ACC on catwalk	View of open space (i.e. no trees) from ACC.	6/13/19 11:09 am PST
IMG_0169.JPG	West side of ACC on catwalk	View of barn where bat have a daytime roost.	6/13/19 11:27 am PST
IMG_0170.JPG	West side of ACC on stairwell	Close up view of fans.	6/13/19 11:28 am PST
IMG_0171.JPG	West side of ACC on stairwell	View of space between fan housing and grate.	6/13/19 11:28 am PST
IMG_0172.JPG	West side of ACC	View of ACC.	6/13/19 11:30 am PST

ATTACHMENT B

GANDA

Garcia and Associates

Natural and Cultural Resources Consultants One Saunders Avenue

San Anselmo, California 94960

Phone: (415) 458-5803 - Fax: (415) 458-5829

August 22, 2016

To: Laura Burkholder

From: Heather L. Johnson

RE: Colusa Generating Station Bat Habitat Assessment and Management Recommendations

Background and Purpose

Incidental bat injuries and mortalities, including red bats (*Lasiurus blossevillii*) a California Department of Fish and Wildlife (CDFW) Species of Special Concern, are occurring at the Colusa Generating Station (CGS) as observed during inspections by the CGS Designated Biologist. Downed (alive but may or may not be able to fly), injured, and dead bats are found scattered on the ground below the air cooled condenser (ACC), and dead bats are found within the ACC interior. Examination of carcasses and ACC units suggest the causes may be collision trauma, hyperthermia and dehydration resulting from entrapment of roosting bats, potential owl predation, and undetermined causes. Downed bats are released outside the station when able to fly, injured individuals are submitted to wildlife care per the CGS Biological Resources Mitigation Implementation and Monitoring Plan (July 2008), and dead bats are counted and photo-documented.

Bat biologist Heather Johnson (I) visited CGS on June 6, 2016 and August 11, 2016 to help identify the species present at CGS and discuss how bats use the station facilities. This report includes observations and recommendations from the daytime inspections of the ACC, examination of carcasses collected within the ACC and from the ground below it, and discussions between myself and Rick Crowe, Laura Burkholder/PG&E biologist, James Moen/PG&E Engineer, Ed Warner/PG&E Senior Plant Manager, Michael Rendon/PG&E Environmental Field Specialist, and contractor Chad Wright/Western Bat Specialists.

Results

Bat Species

I examined approximately 65 carcasses and identified five species including one special-status species: red bats (CDFW Species of Special Concern), Mexican free-tailed bats (*Tadarida brasiliensis*), at least two *Myotis* species, and big brown bats (*Eptesicus fuscus*). Size comparison between species is shown in Photo 1. The *Myotis* species had forearm lengths of 28-37 mm (measuring mummified specimens) indicating two species were present since 6-7mm variation is normal within one species. Based on range and habitat the following four *Myotis* species are potentially present: California (*Myotis californicus*), small-footed (*Myotis ciliolabrum*), Yuma (*Myotis yumanensis*), and little brown myotis (*Myotis lucifugus*). On August 11th I identified a fresh carcass as either Yuma myotis or little brown myotis.

Based on my sampling the bats most commonly found dead inside the ACC units are *Myotis* sp., with fewer numbers of big brown bats, and low numbers of Mexican free-tailed bats. During CGS pre-construction surveys roosting bats were found in a barn south of the station site. Based on Mr. Crowe's description of the bat occupancy in the barn it could house source populations of the numerous *Myotis* sp. found at CGS. Also, other CGS structures that have not been surveyed may house roosting bats.

Special Status Bats

Red bats have been found on the ground under the ACC. These red bat carcasses may have been displaced from the interior; literature review and bat biologists include examples of this species occasionally roosting in caves and mines. However, the red bat is primarily a foliage- roosting species and may be roosting on the ACC exterior infrastructure only if they accept/perceive beams and cross-bars as analogous to tree limbs. My reasoning for this idea is related to the fact that red bats and hoary bats (*Lasiurus cinereus*) which are commonly referred to as "migratory tree bats" have the highest mortality rate among bats killed by wind turbines. A current theory in wind turbine research is that these species could perceive turbines as trees. Because of seasonal migration, PG&E may expect red bat numbers to be highest in spring and fall. Bat numbers in general may be highest April through September during the reproductive season.

Because the red bat carcasses (and carcasses of other species) were collected in a roosting position with closed wings, closed mouth, and closed toes, I suspect the bats were roosting when they died. Alternatively, I would consider other reasons for grounding in red bats (and hoary bats which have not been found at CGS) including migratory fatigue, disorientation, predator attacks, aggressive interactions with other bats, the burden of carrying young when switching roost locations, and when mating. The red bat individuals at CGS may have been killed while foraging, perhaps by turbulent air causing fatigue, disorientation, or other physical damage. No external physical damage was observed on the red bats, or on many of the *Myotis*

sp. carcasses. Mr. Crowe reports abundant insects available around the ACC, as supported by foraging insectivorous birds observed during the day, therefore foraging behavior, and night roosting behavior (resting locations used between foraging periods) are important considerations.

Appendix A has a brief review of several additional special status species that could occur at CGS. The Townsend's big-eared bat (*Corynorhinus townsendii*) and mastiff bat (*Eumops perotis californicus*) have a low potential to occur at CGS, and the pallid bat (*Antrozous pallidus*) has a moderate potential to occur. The Designated Biologist should be able to identify, or have available assistance to identify, each of these special status bat species.

Habitat Use at CGS

The generating station provides foraging and roosting opportunities because lights and wind concentrate insects around the buildings and structures, also the ACC and other structures are the largest features in the regional landscape. In current research on wind turbine mortality it has been proposed that bats are attracted to the largest/tallest features in a landscape during

mating and foraging. In addition, other local resources such as agricultural outbuildings, orchards, and water canals also provide foraging and roosting habitat.

At this time ground-based standard survey equipment such as infrared video or acoustic detectors would be inadequate to study bat behavior due to the height of the building as well as acoustic interference from the station facilities. My recommendations include inspection and/or emergence surveys of the ACC infrastructure.

ACC Bat Habitat

Bat roosting habitat is available inside tubular metal beams with internal cavities composing the infrastructure (Photo 2), between vertically stacked thick plywood pieces in several locations on the roof, and within about 42 units composing the structure (Photo 3). The ACC interior does not provide maternity roosting habitat because of the extreme climate conditions (heat and air movement) and restricted access for bats. I consider ACC roosting to be opportunistic because no guano deposits or urine stains were observed in these potential roosting spaces, however survey access was limited, site wind conditions likely prevent guano from collecting, and the station is regularly cleaned.

Each unit is a cave-like metal room (Photo 4) with a large fan covering a hole centered in the floor, and each fan has a metal grate below it with an approximately 10-inch gap between the bottom edge of the fan plenum and the metal grate. Birds have been observed entering the units through this gap between the plenum and the grate, and bats may enter here when the fan is off. Therefore installing wire mesh to exclude bats and birds at these gaps (Photo 2) is recommended.

It is not likely that bats enter the unit interiors by coming up through the 4x4 inch grating. Bats can pass through 4x4 inch grating if forced by strong air movement or if determined to reenter a roost, for example to reach flightless young or to enter the only suitable hibernation roost available in a region. However, opportunistically roosting bats are not likely to attempt to pass through the existing grating which would require landing, crawling through, circling in flight, then flying through gaps between fan blades. They are capable but not likely to do so. To support this opinion, I have provided a drawing from a professional company that designs bat-friendly gates which are used to cover vertical mine shafts but allow bat access for roosting. Photo 5 illustrates a bat gate design with grating and horizontal gaps similar to the plenum gaps. The ACC structure (grate over plenum opening as viewed from below) is similar to the pictured gate installed over an inverted vertical shaft. The gate designer provides the horizontal gaps because bats are not expected to fly through the gates' grated surface.

Recommendations

1. Maintain metal flashing in all ACC exterior door gaps and at I-beam openings to block potential bat access.

2. If ACC exterior I-beam and door gaps must remain open during intensive maintenance work, install heavy-ply plastic sheeting drapes (that fall up to 12 inches below the gaps) over the openings at the end of each day to block the gaps overnight. Bats can find newly available roost sites in a single night.

3. Install brush heads around the edges of the ACC exterior I-beam and door gap flashing to completely block these openings. An example of using brush heads to exclude bats is shown in Photo 6. Replace brushes as necessary when effectiveness is compromised by wear or ultraviolet decay.

4. Install 1/4 to 1/2 inch mesh wire to block the gaps between the plenum and existing grate below the ACC fans (Photo 2).

5. Investigate the ACC infrastructure beam hollows for roosting bats and exclude as necessary using hardware cloth fitted into the openings.

6. Remove all carcasses from the ACC interior to establish baseline conditions for continued monitoring.

7. Do not use flexible exclusion netting of any kind as it may entrap bats and birds.

8. Survey other CGS structures for evidence of bat roosting.

9. Ensure the CGS Designated Biologist is able to identify special status bat species as well as other species by providing a site-specific field identification key, and/or by providing carcasses to a bat biologist for identification confirmation. Photographic identification may be possible with some species.

10. Continue current monitoring, especially the ACC interior and ground below. After documentation, continue to release downed bats, if possible, outside the station and submit injured bats to wildlife care. Continued monitoring may provide additional clues to causes of mortality.

11. Compare numbers and species observed at the ACC from May 13 to August 9 in 2016 (when the I-beam and door gaps had no flashing) to the same time period in 2017 (when I-beam and door gaps are

blocked) to examine the effectiveness of the exclusion. This data will only be meaningful if the door gaps remain blocked.

Appendix A

CDFW Species of Special Concern Occurring in the CGS region of the Central Valley

Species	Likelihood of Occurrence
Red bat *Lasiurus blossevillii*	Confirmed present from several carcasses found on ground under ACC. The red bat sometimes roosts in caves and mines but is typically a foliage-roosting species. The presence of dead red bats under the ACC may suggest alternate sources of mortality than entrapment inside the ACC building.
Pallid bat *Antrozous pallidus*	Moderate potential to occur in CGS structures. This species occurs in the Central Valley particularly in agricultural areas and grassland/oak woodland habitat and may attempt to roost in/on the ACC.
Townsend's big-eared bat *Corynorhinus townsendii*	Low potential to occur at CGS because it is rare in the Central Valley and not likely to attempt to roost in/on the ACC. May roost in cave-like spaces in buildings such as warehouses and sheds.
Mastiff bat *Eumops perotis californicus*	Low potential to attempt to roost in/on the ACC; this species has roosted in trees and buildings elsewhere in coastal California but is most often found in crevices in cliffs and rocky outcrops in eastern California. Populations are known in the Sutter Buttes approximately 25 miles to the SE.

Appendix B:

Photographs

Photo 1. Species identified among a collection of carcasses examined on June 6

Photo 2. Side view with left side arrow indicating tubular cavity in infrastructure, and midground arrows and lines indicating gap between housing around fan (plenum) and grate.

Photo 3. An overview of the ACC underside showing cells with fans inside housing (plenum) above grates, and infrastructure.

Photo 4. Interior of room above fan with red arrows indicating bat-accessible gaps by I-beam and above door on June 6, 2016. On August 11, 2016 metal flashing was installed in the two gaps identified by arrows.

Photo 5. The grated top of this bat gate is not considered useful for bats rather they fly through the horizontal gaps and circle within the cupola space, then they can negotiate flight in a vertical shaft.

Photo 6. Brush heads block the space around a chain passing through a concrete deck in a PG&E dam.

ATTACHMENT C

Meeting Summary Prepared by Scott Osborn, CDFW

From: Osborn, Scott@Wildlife <Scott.Osborn@wildlife.ca.gov>
Sent: Monday, June 17, 2019 11:25 AM
To: Stroud, Andrea@Energy <Andrea.Stroud@energy.ca.gov>
Subject: Notes from field visit to Colusa Generating Station

Hi Andrea –

As I related at the end of our field visit regarding bat mortalities at the Colusa Generating Station on June 13, 2019, here are my preliminary conclusions about the bat deaths and some suggestions to address them:

1. I agree with the hypothesis that bats are gaining entrance to the ACC cells, probably while a cell's fan is off, then are either trapped in place and starve or desiccate or are impacted by the fan after it is turned on.

2. Additional work could shed light on whether this hypothesis is correct:

    a. Active acoustic surveillance (using a handheld bat detector and spotlight/night vision) could help identify what entrances the bats are using. This would likely need to be done on an evening when the ACC fans are all or mostly off. It might also require more than one night to have a reasonable chance to see the bats accessing the building. The goal should be to determine where specifically the bats are accessing the building so that exclusion options can be considered.

    b. Bat carcasses picked up from underneath the ACC should be mapped on a grid representing the cell array for each visit. If there is a way to record each cell's fan activity during the period since the previous carcass survey, that would help us determine whether fans cycling off and on is the problem. If possible, we should record whether each cell's fan was: continuously off, continuously on, cycling off/on during the period preceding the survey.

3. Depending on the results of the additional field work, there are a few possible remedies:

    a. Additional exclusion work. The building appears to me to be very permeable to bat entrance, with many small gaps on the outside surface in addition to the large openings under the fans. If the primary access points can be identified, then perhaps they can be closed. In particular, it appears to me that the large gap between the fan housing and the large-mesh screen below each fan could provide easy ingress to a bat (when the fan is off). If the fan-mesh gap is the major access for bats, then perhaps an engineered covering could be designed to close the gap to bats while still providing sufficient airflow for the cells to work.

    b. Increase opportunities for escape from a cell when the fan turns on. I am not sure how well bats could fly in a cell once the fan turns on. But if they can navigate through the turbulent air, then increasing the openings between adjacent cells might allow bats to move to a cell with its fan off, or to the end of the building where a bat-friendly (but

owl-unfriendly) opening could be installed. There may be other way to make egress from the cells easier, but this seemed like the easiest way to start.

c. Hazing prior to turning the fan on. It might be worth consulting with bat behavior and acoustic experts working on bat deterrent methods to see if some sort of hazing could be developed to encourage the bats to leave before the fan turns on. This would require the computer controlling the ACC cells to turn on the hazing system in a cell some minutes before turning on the fan.

As I mentioned at the end of the meeting, I think it is important to try to reduce or eliminate the mortality of all the bat species at the CGS. Although the numbers of bats killed each year is relatively small, if it continues the cumulative mortality and impact on the populations of these long-lived, low reproductive output species would be significant.

Thanks to you and the folks at the CGS for letting me take a look at the system and for all the helpful information that was provided. I am available for additional consultation if desired.

Scott

==========

Scott D. Osborn, Ph.D., CWB® *Statewide Coordinator for Small Mammal Conservation*

California Dept. of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program

1812 Ninth Street, Sacramento, CA 95811-7012, 916-324-3564

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October 8, 2019

Mr. Anwar Ali
Compliance Program Manager
California Energy Commission
1516 Ninth Street, MS 2000
Sacramento, CA 95814

Re: Results of Active Acoustic Bat Surveillance at Colusa Generating Station

Dear Mr. Ali,

On June 13th 2019 the California Energy Commission staff participated in a site visit at Pacific Gas and Electric Company's (PG&E's) Colusa Generating Station along with Scott Osborn, the Statewide Coordinator for Small Mammal Conservation at the California Department of Fish and Wildlife (CDFW). The purpose of the site visit was to observe the cells of the air-cooled condenser (ACC) and the locations where dead and desiccated bats have been found and reported. During this site visit, PG&E agreed to conduct active acoustic surveillance to determine where and how bats accessed the ACC building and discuss any appropriate avoidance and minimization options. The active acoustic bat surveillance was conducted on September 10th and 15th, 2019. Details of the surveillance site, methods, results, discussion, and conclusion follow.

Surveillance Site

Active acoustic bat surveillance was conducted at PG&E's Colusa Generating Station ACC. The ACC is approximately 85,860 square feet (1.97 acres) and consists of an open lattice infrastructure supporting an elevated, corrugated metal, warehouse-like building which is internally separated into 42 cells. Each pyramid-shaped cell is approximately 42' long x 46' wide x 34' high, located above a fan.

Methods

Four to five surveyors from PG&E, Garcia and Associates, and Jacobs conducted two acoustic surveys at the ACC on September 10th and 15th, 2019. Surveys consisted of visually and acoustically monitoring for free-flying bats from stationary points and along mobile transects (Photo 1) from 30 minutes prior to sunset, to 60 to 90 minutes after sunset. Visual observations were made with the unaided eye and binoculars in ambient light, and after dark aided by flashlight and spotlight. Infra-red video taken with a Sony Nightshot camera and three auxiliary infra-red light arrays was also utilized (Photo 2). Acoustic surveillance was performed with Anabat broadband detectors. Acoustic

surveillance was tested when the ACC was operational and confirmed that ambient noise precluded detector use. Therefore, surveys were conducted when the ACC was non-operational.

As indicated in Photo 1, 2, 3, and 4, stationary surveyors monitored at varying heights: the southeast corner ACC stairway at approximately 40' (September 10th) and 75' (September 15th) above ground (Photo 2); the northwest corner ACC ladder at approximately 40' (September 10th) and 75' (two surveyors on September 15th) above ground; and an adjacent structure on the east side of the ACC (photos 3 and 4) at approximately 40' above ground (September 10th and 15th). The open air space underneath the ACC was monitored by two mobile ground surveyors on September 10th and one mobile ground surveyor on September 15th. Mobile surveyors randomly walked the ACC north and south catwalks in the second hour after sunset. Between two to three hours after sunset, all surveyors inspected the ACC cell interiors for bat occupancy and paused to visually and acoustically survey if detections were made. Surveyors also looked at a subset of mortalities found on the ground and in the cells.

Results and Discussion

All five surveyors reported the inability to visually locate and track detected bats. In addition, most detections were of bats flying in the area surrounding the ACC in the second hour after sunset, often foraging around facility lights. Detections underneath the ACC had no accompanying visual observation of flying bats. Surveying the large, elevated ACC is challenging due to limited access, safety constraints, and inherent problematic aspects such as generation of heat and background noise.

Acoustic recordings were dominated by hoary bats (*Lasiurus cinereus*) and Mexican free-tailed bats (*Tadarida brasiliensis*). Approximately 15 visual observations of flying bats were made from the ACC catwalks and ground; each of these bats was foraging in the open air surrounding the ACC or near lights on the catwalks. The hoary bat was the only species successfully identified in flight, i.e., its size, coloration, and flight path were observable for several seconds. Mexican free-tailed bats and big brown bats (*Eptesicus fuscus*) afforded only glimpses of less than three seconds. Very few *Myotis* sp. bats were detected during the surveys and none were identified in flight.

One live bat, a red bat (*Lasiurus blossevillii*), was found roosting inside the ACC during visual and acoustic checks of each cell between two to three hours after sunset on September 10th. This live red bat may be the same individual found alive but grounded below the ACC the following day. It was released offsite and seemed able to fly. On September 15th, multiple bats were detected underneath an ACC cell however no bats entered the cell.

The following species account for mortalities at the ACC: red bat, big brown bat, *Myotis* sp. (typically Yuma myotis [*Myotis yumanensis*]), Mexican free-tailed bat, pallid bat

(*Antrozous pallidus*), and hoary bat. Myotis bats are the most common mortalities. The red bat and pallid bat are CDFW Species of Special Concern (CDFW 2019).

In general, bat carcasses are found inside the ACC cells or on the ground below the ACC. Carcasses vary in appearance; those found on the ground may have no visible injury (often in closed-wing roosting position) or injuries are evident (e.g., missing heads). Similarly, carcasses within the cells may appear intact, in a closed-wing roosting position, or individuals show signs of mortality likely from surface strikes. Therefore, it is assumed bats are gaining entry into the cells above the fans and dying from dehydration or physical injury. Bats may also be killed due to air pressure/wind movement in the open area underneath the fans. Occasionally, live bats are found grounded and released offsite or submitted to wildlife rehabilitation which is evident of the effects of wind buffeting or air pressure changes. Alternatively, these live individuals may have escaped from the ACC cells but are grounded. Mortalities occur when the ACC is both non-operational and operational.

Conclusions

- In order to avoid noise interference with acoustic monitoring via Anabat broadband detectors, the ACC must be non-operational.
- Ground-based infra-red video bolstered by auxiliary infra-red light arrays did not provide a wide enough field of view or sufficient resolution to effectively monitor bats.
- Most acoustic detections in the two to three hours after sunset were of bats foraging in the open air surrounding the ACC, based on acoustic detection followed by brief visual observation of flying bats using flashlights and/or a spotlight.
- Few acoustic detections were from bats flying underneath the ACC and none of these were visually located.

Recommendations

To decrease bat mortalities at the Colusa Generating Stations ACC, PG&E proposes, and is in the process of changing out existing lighting. In 2016 PG&E secured the ACC interior lights at night, we did not secure the lights on the stairs or ACC walkway due to the time it takes for the High-Pressure Sodium (HPS) lights to illuminate when turned on. If we retrofit these lights with LEDS, we will shut these lights off at night because they will illuminate immediately when turned on. Our Conditions of Certification includes an exterior lighting plan, so changing the lights may require an amendment to the plan. PG&E has contacted the manufacture of our current HPS lights, and they have ensured PG&E there is an LED substitute that provides similar illumination.

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Should you have any questions or concerns, please contact TJ Gomez, Environmental Field Specialist for the Colusa Generating Station, at (530) 393-2926 or at ajgu@pge.com.

Sincerely,

Josh Harris
Operations Supervisor
Colusa Generating Station

cc: Tim Wisdom, PG&E (electronic)
Steve Royall, PG&E (electronic)
Sam Garcia, PG&E (electronic)
TJ Gomez, PG&E (electronic)

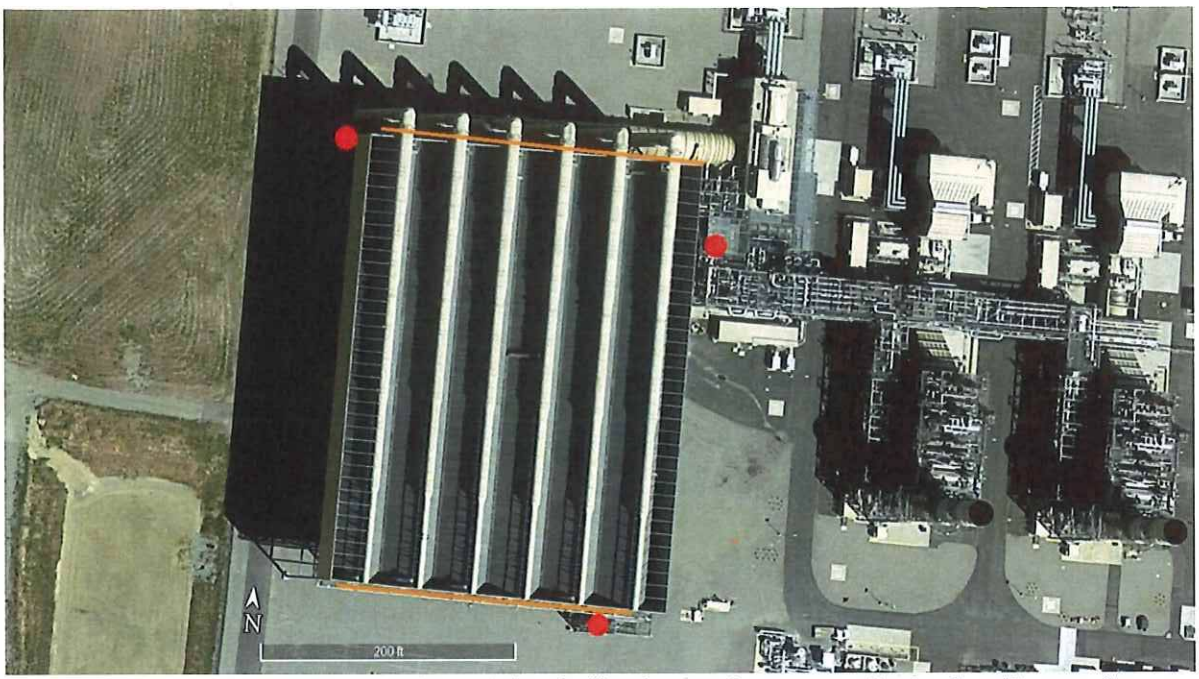

Photo 1 Aerial view of the ACC with red dots indicating stationary monitoring locations and orange lines indicating north and south catwalk mobile transects

Photo 2 Infra-red video camera and auxiliary infra-red light set-up below ACC on Sept. 10; red circle indicates surveyor at southeast stairway monitoring location approx. 40 feet above ground

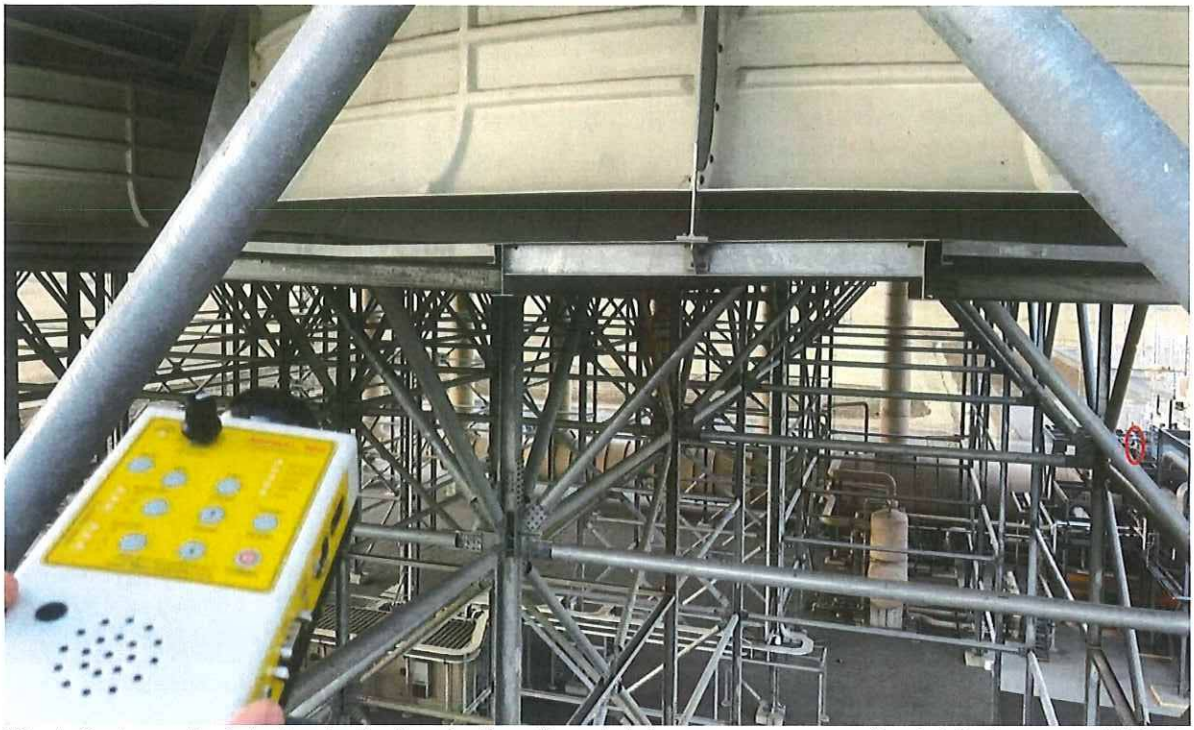

Photo 3 Acoustic detector in the hand of southeast stairway surveyor on Sept. 15 at approx. 75 feet above ground; red circle indicates east stairway surveyor at approx. 40 above ground

Photo 4 Another view of the east stairway surveyor (red arrow) relative to the ACC

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Appendix 2, HAZ-1

Hazardous Materials Appendix C
Colusa Generating Station Onsite Inventory of Hazardous Materials

Trade Name	Chemical Name	Common Name / Chemical Purpose	Location	Storage Container Type	Capacity of Largest Container	Unit	Number of Items	Total Amount Stored	Maximum Daily Amount	Average Daily Amount	Days on Site	Estimated Pounds Per Year of Chemical
Product #001A0382	Shell Omala Oil HD 220	Gear box/ACC oil	Air Cooled Condenser - Gear Box (E13)	ACC Gear Box	12 gal	gallons	42	504 gal	504	504	365	504.0
	Carbon dioxide, Liquid	Carbon dioxide, Liquid	Carbon Dioxide Bottle Storage Rack at Combustion Turbine-A (Site Feature #59)	Tank	12,000 lb	pounds	1	12,000 lb	12,000	9,000	365	9,000 lb onsite daily
	Carbon dioxide, Liquid	Carbon dioxide, Liquid	Carbon Dioxide Bottle Storage Rack at Combustion Turbine-B (Site Feature #59)	Tank	12,000 lb	pounds	1	12,000 lb	12,000	9,000		9,000 lb onsite daily
	Carbon dioxide, Liquid	Carbon dioxide, Liquid	Carbon Dioxide Bottle Storage Rack at Steam Turbine (Site Feature #59)	Tank	12,000 lb	pounds	1	12,000 lb	12,000	9,000		9,000 lb onsite daily
Nalco TRAC107 PLUS	PSO (1.0 - 5.0%)	Closed Cooling Corrosion/Scale Inhibitor	Closed Cooling Chemical Feed Tank (Site Feature #106)	55-gal Metal or Plastic	55 gal	gallons	4	220 gal	220	165	365	1,010
MSDS #778983	Turbine Oil	lube oil	Combustion Turbine-A (E1)	CT-A Lube Oil	6,150 gal	gallons	1	6,150 gal	6,150	4,613	365	33,671 lb onsite daily
	Hydrogen	Hydrogen / Coolant	Combustion Turbine-A HRSG (G2)	Generator	10,617 cu ft	cubic feet	1	10,617 cu ft	10,617	7,963	365	
MSDS #778984	Turbine Oil	lube oil	Combustion Turbine-B (E2)	CT-B Lube Oil	6,150 gal	gallons	1	6,150 gal	6,150	4,613	365	33,671 lb onsite daily
	Hydrogen	Hydrogen / Coolant	Combustion Turbine-B HRSG (G2)	Generator	10,617 cu ft	cubic feet	1	10,617 cu ft	10,617	7,963	365	
	Oxygen Gas	Oxygen Gas	Continuous Emissions Monitor System Shelters (G4)	Cylinders	200 cu ft	cubic feet	6 (3 per CEMS shelter)	1,200 cu ft	1200	900	365	
	Nitrogen oxide / Nitrogen dioxide (Low Range)	Nitrogen oxide / Nitrogen dioxide (Low Range)	Continuous Emissions Monitor System Shelters (G4)	Cylinders	200 cu ft / 0.062 lb	cubic feet / pounds	6 (3 per CEMS shelter)	1200 cu ft / 0.374 lb	1200	900 cu ft / 0.281 lb	365	0.281 lb onsite daily
	Nitrogen oxide / Nitrogen dioxide (High Range)	Nitrogen oxide / Nitrogen dioxide (High Range)	Continuous Emissions Monitor System Shelters (G4)	Cylinders	200 cu ft / 0.062 lb	cubic feet / pounds	6 (3 per CEMS shelter)	1200 cu ft / 0.374 lb	1200	900 cu ft / 0.281 lb	365	0.281 lb onsite daily
	Carbon monoxide (Low Range)	Carbon monoxide (Low Range)	Continuous Emissions Monitor System Shelters (G4)	Cylinders	200 cu ft	cubic feet	6 (3 per CEMS shelter)	1200 cu ft	1,200	900	365	
	Carbon monoxide (High Range)	Carbon monoxide (High Range)	Continuous Emissions Monitor System Shelters (G4)	Cylinders	200 cu ft	cubic feet	6 (3 per CEMS shelter)	1200 cubic feet	1,200	900	365	

Trade Name	Chemical Name	Common Name / Chemical Purpose	Location	Storage Container Type	Capacity of Largest Container	Unit	Number of Items	Total Amount Stored	Maximum Daily Amount	Average Daily Amount	Days on Site	Estimated Pounds Per Year of Chemical
5711	Aqueous Ammonia with Monoethanolamine (5 - 12%)	BFW pH Adjustment and Corrosion Control (Ammonia / Amine Blend)	Cycle Chemical Feed Shelter (Boler Feedwater/Condensate) (B1)	Tote	400 gal / 3,338 lb	gallons / pounds	1	400 gal / 3,338 lb	400 gal / 3,338 lb	300 gal / 2,504 lb	365	6,320
BL-153	Ammonium Hydroxide 10-19%	BFW pH Adjustment and Corrosion Control (Ammonia / Amine Blend)	Cycle Chemical Feed Shelter (Boler Feedwater/Condensate) (B1)	Tote	400 gal / 3,338 lb	gallons / pounds	1	400 gal / 3,338 lb	400 gal / 3,338 lb	300 gal / 2,504 lb	365	3,338 lbs on site daily
BL-152	Aqueous Ammonia with Monoethanolamine (5 - 10%)	BFW pH Adjustment and Corrosion Control (Ammonia / Amine Blend)	Cycle Chemical Feed Shelter (Boler Feedwater/Condensate) (B1)	Tote	400 gal / 3,338 lb	gallons / pounds	1	400 gal / 3,338 lb	400 gal / 3,338 lb	300 gal / 2,504 lb	365	3,338 lbs on site daily
ELIMINOX	Carbohydrazide (5 - 10%)	Oxygen Scavenger	Cycle Chemical Feed Shelter (Boler Feedwater/Condensate) (B1)	Drum	55 gal	gallons	1	55 gal	55	41	365	490
BT-3400	Pre-blended Phosphate/Caustic (1.0 - 5.0%)	pH and Corrosion Control (HP & IP Phosphate Feed)	Cycle Chemical Feed Shelter (HRSG A&B) (B1)	Tote	110 gal	gallons	1	110 gal	110	83	365	979
CROSSTRANS 106 and 207	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-A Excitation Transformer (E9)	Transformer	521 gal	gallons	1	521 gal	521	391	365	3,165 lb onsite daily
CROSSTRANS 106 and 206	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-A GSU Transformer (E4)	Transformer	14,950 gal	gallons	1	14,950 gal	14,950	11,213	365	90,821 lb onsite daily
CROSSTRANS 106 and 208	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-A Isolation Transformer (E10)	Transformer	977 gal	gallons	1	977 gal	977	733	365	5,935 lb onsite daily
CROSSTRANS 106 and 207	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-B Excitation Transformer (E9)	Transformer	521 gal	gallons	1	521 gal	521	391	365	3,165 lb onsite daily
CROSSTRANS 106 and 207	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-B GSU Transformer (E5)	Transformer	14,950 gal	gallons	1	14,950 gal	14,950	11,213	365	90,821 lb onsite daily
CROSSTRANS 106 and 208	mineral oil	mineral oil	Electrical Equipment: Combustion Turbine-B Isolation Transformer (E10)	Transformer	977 gal	gallons	1	977 gal	977	733	365	5,935 lb onsite daily
CROSSTRANS 106 and 209	mineral oil	mineral oil	Electrical Equipment: Station Service Transformer (E7)	Transformer	6,510 gal	gallons	1	6,510 gal	6,510	4,883	365	39,548 lb onsite daily
CROSSTRANS 106 and 210	mineral oil	mineral oil	Electrical Equipment: Station Service Transformer (E7)	Transformer	6,510 gal	gallons	1	6,510 gal	6,510	4,883	365	39,548 lb onsite daily
CROSSTRANS 106 and 209	mineral oil	mineral oil	Electrical Equipment: Steam Turbine Excitation Transformer (E11)	Transformer	747 gal	gallons	1	747 gal	747	560	365	4,538 lb onsite daily
CROSSTRANS 106 and 208	mineral oil	mineral oil	Electrical Equipment: Steam Turbine GSU Transformer (E6)	Transformer	19,015 gal	gallons	1	19,015 gal	19,015	14,261	365	115,516 lb onsite daily

	Helium	Helium, Compressed	Gas Metering Station (G5)	Cylinders	250 cu ft	cubic feet	5	1250 cu ft	1,250	938	365	
	Methane	Methane Compressed	Gas Metering Station (G5)	Cylinders	59 cu ft	cubic feet	1	59 cu ft	59	44	365	
MSDS #778986	Turbine Oil	lube oil	Hazardous Materials Storage Area (M2)	Drum	55 gal	gallons	4	220 gal	220	165	365	1,205 lb onsite daily
Product #001A0383	Shell Omala Oil HD 221	gear box/ACC oil	Hazardous Materials Storage Area (M2)	Barrels	55 gal	gallons	2	110 gal	110	83	365	606 lb onsite daily
Trade Name	Chemical Name	Common Name / Chemical Purpose	Location	Storage Container Type	Capacity of Largest Container	Unit	Number of Items	Total Amount Stored	Maximum Daily Amount	Average Daily Amount	Days on Site	Estimated Pounds Per Year of Chemical
	Hydrogen	Hydrogen	Hydrogen Storage Area (G1)	Tube	44,000 cu ft	cubic feet	1	44,000 cu ft	44,000	33,000	365	53,000
AlphaCELL 195GXL- FT3	Lead Acid Battery	Lead Acid Battery	Packaged Electrical Electronic Control Center (PEECC) (M7)	Electrical Equipment: Battery	100 lb	pounds	116	11,600 lb	11,600	11,600	365	11,600
	Acetylene Gas	Acetylene Gas	Plant Maintenance Area (G3)	Cylinders	143 cu ft	cubic feet	4	572 cu ft	572	429	365	
	Argon Gas	Argon Gas	Plant Maintenance Area (G3)	Cylinders	381 cu ft	cubic feet	2	762 cu ft	762	572	365	
	Oxygen Gas	Oxygen Gas	Plant Maintenance Area (G3)	Cylinders	250 cu ft	cubic feet	6	1500 cu ft	1,500	1,125	365	
	Propane Gas	Propane Gas	Plant Maintenance Area (G3)	Cylinders	20 lb	pounds	16	319 lb	320	240	365	
	Nitrogen Gas	Nitrogen Gas	Plant Maintenance Area (G3), Compressed Cylinder Storage Area (C3)	Cylinders	250 cu ft	cubic feet	48	12,000 cu ft	12,000	12,000	365	
CDID: Stationary SPg - IB	Lead-Antimony Battery	Lead-Antimony Battery	Power Distribution Center in center of site (M6)	Electrical Equipment: Battery	110 lb	pounds	60	6,600 lb	6,600	6,600	365	6,600
CDID: Stationary SPg - IB	Lead-Antimony Battery	Lead-Antimony Battery	Power Distribution Center in Water Treatment Building (M6)	Electrical Equipment: Battery	110 lb	pounds	20	2,200 lb	2,200	2,200	365	2,200
MSDS #778985	Turbine Oil	lube oil	Steam Turbine (E3)	Steam Turbine Lube Oil System (E3)	5,250 gal	gallons	1	5,250 gal	5,250	3,938	365	28,744 lb onsite daily
	Hydrogen	Hydrogen / Coolant	Steam Turbine Generator (G2)	Generator	15,439 cu ft	cubic feet	1	15,439 cu ft	15,439	11,579	365	
	Sulfur Hexafluoride	SF6	Sulfur Hexafluoride Breakers (G4)	Electrical Equipment: Breaker	205 lb	pounds	7	1,432 lb	1,432	1,074	365	1,074 lb onsite daily
C & D Technologies 3DJ-200	Flooded Lead-Calcium Battery	Flooded Lead-Calcium Battery	Switchyard Control House (M7)	Electrical Equipment: Battery	100 lb	pounds	60	6,000 lb	6,000	6,000	365	6,000
7469	Anti-foam	Foam Control (ZLD)	Water Treatment Building (High Efficiency RO and ZLD) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	4,200
FO-321	Anti-foam	Foam Control (ZLD)	Water Treatment Building (High Efficiency RO and ZLD) (Site Feature #15)	Tank	360	gallons	1	360	360	270	365	3013 lbs on site daily

Nalco 8131	Coagulant (5 - 20%)	Coagulant (UF and Lamella Clarifier)	Water Treatment Building (Raw Water Pre-Treatment and RO) (B4)	Abovegro und Tank	2,500 gal / 31,295 lb	gallons / pounds	1	2,500 gal / 31,295 lb	2,500 gal / 31,295 lb	1,875 gal / 23,471 lb	365	23,471 lb onsite daily
P-828L	Ferric Sulfate 30-60%	Coagulant (UF and Lamella Clarifier)	Water Treatment Building (Raw Water Pre-Treatment and RO) (B4)	Abovegro und Tank	2,500 gal / 31,295 lb	gallons / pounds	1	2,500 gal / 31,295 lb	2,500 gal / 31,295 lb	1,875 gal / 23,471 lb	365	23,471 lb onsite daily
Cat-Floc 8018 Plus	Flocculant (5 - 20%)	Flocculant (Lamella Clarifier)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	480
7744	Flocculant (5 - 20%)	Flocculant (Lamella Clarifier)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	480
P-817E	Flocculant (5 - 20%)	Flocculant (Lamella Clarifier)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	480
Trade Name	Chemical Name	Common Name / Chemical Purpose	Location	Storage Container Type	Capacity of Largest Container	Unit	Number of Items	Total Amount Stored	Maximum Daily Amount	Average Daily Amount	Day s on Site	Estimated Pounds Per Year of Chemical
PC-7408	Sodium Bisulfite (30 - 60%)	Water Treatment Feedwater Dechlorinization (Sodium Bisulfite Feed)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	2,399
RL-124	Sodium Bisulfite (30 - 60%)	Water Treatment Feedwater Dechlorinization (Sodium Bisulfite Feed)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tank	360 gal	gallons	1	360 gal	360	270	365	3,600
	Sulfuric Acid 98% (66 degree Baume 93%)	pH Adjustment (Sulfuric Acid for pH Adjustment)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	300 gal	gallons	2	600 gal	600	450	365	9,205
8735	Sodium Hydroxide	pH Adjustment (Caustic for pH Adjustment)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	2,399
BL-1304	Sodium Hydroxide 15-40%; Potassium Hydroxide 10-30%	pH Adjustment (Caustic for pH Adjustment)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tank	360 gal	gallons	1	360 gal	360	270	365	4543 lbs on site daily
PC-191T	Antiscalant	RO Scale Inhibition (Raw Water RO Antiscalant)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tote	400 gal	gallons	1	400 gal	400	300	365	1,200
RL-9008	Antiscalant 2-Phosphono-1,2,4 - butane tricarboxylic acid 5-10%	RO Scale Inhibition (Raw Water RO Antiscalant)	Water Treatment Building (Raw Water Pre-Treatment and RO) (Site Feature #15)	Tank	360 gal	gallons	1	360 gal	360	270	365	3431 lb on site daily
	Sodium Hypochlorite (10 - 12%)	Bacteria Control for UF (Sodium Hypo-chlorite Feed)	Water Treatment Building (Raw Water Pre-Treatment and RO) (B4)	Abovegro und Tank	1000 gal	gallons	1	1,000 gal	1,000	750	365	6,259 lb onsite daily

PERMA-CARE® PC- 98	Sodium Hydroxide (5 - 15%)	High pH Cleaning (RO Cleaning Chemical)	Water Treatment Building (Reverse Osmosis and UF Cleaners) (Site Feature #15)	55-gal Metal or Plastic Drum .56	55 gal	gallons	4	220 gal	220	165	365	940
PERMA-CARE® PC- 40	Sodium Percarbonate (5 - 15%)	Surfactant for Cleaning (RO Cleaning Chemical)	Water Treatment Building (Reverse Osmosis and UF Cleaners) (Site Feature #15)	5-gal Pail	5 gal	gallons	2	9 gal / 100 lbs	10	8	365	42
8344	Citric Acid (5 - 15%)	Low pH Cleaning (UF Iron Cleaner)	Water Treatment Building (Reverse Osmosis and UF Cleaners) (Site Feature #15)	55-gal Plastic Drum .56	55 gal	gallons	4	220 gal	220	165	365	575
RL-2016	Citric Acid (10-30%)	Low pH Cleaning (UF Iron Cleaner)	Water Treatment Building (Reverse Osmosis and UF Cleaners) (Site Feature #15)	Drum	55 gal	gallons	4	220 gal	220	165	365	2006 lbs on site Daily
	Soda Ash	Ph control	Water Treatment Building (Site Feature #15)	Drum	500 lbs	lbs	2	1000 lbs	1,000	750	365	750
	Sodium Hypochlorite (10 - 12%)		Water Treatment Building (Site Feature #15)	Tote	300 gal	gallons	1	300 gal	300	225	365	600
RL-1500	Ethylene diamine tetraacetic acid, tetrasodium salt (10-30%)	High pH Cleaning (RO Cleaning Chemical)	Water Treatment Building (Site Feature #15)	Dum	55 gal	gallons	2	110 gal	110	83	365	

Trade Name	Chemical Name	Common Name / Chemical Purpose	Location	Storage Container Type	Capacity of Largest Container	Unit	Number of Items	Total Amount Stored	Maximum Daily Amount	Average Daily Amount	Days on Site	Estimated Pounds Per Year of Chemical
CL-2156	5-chloro-2methyl-4-isothiazolin-3-one 1.11%; 2-methyl-4-isothiazolin-3-one .39%; Magnesium Nitrate 1.61%; Magnesium Chloride .96%	Evaporative Cooling Water Biocide	Wet Surface Air Cooled Chemical Feed Shelter (B2)	Tank	150 gal	gallon	1	150 gal	150	113	365	1286 lbs onsite daily
CL-497	Sodium Chlorosulfamate 7-13% Sodium bromosulfamate 7-13% Sodium Hydroxide 1-5% Sodium Sulfamate 1-6%	Evaporative Cooling Water Biocide	Wet Surface Air Cooled Chemical Feed Shelter (B2)	Tank	360 gal	gallon	1	360 gal	360 gallon	200	365	2180 lbs onsite daily
3DTBR06	Bioreporter (1 - 10%)	Tracing Agent (Bioreporter)	Wet Surface Air Cooled Chemical Feed Shelter (B2)	5-gal Pail	5 gal	gallons	2	10 gal	10	8	365	330
Nalco 3DT161	Inhibitor (5 - 10%)	Evaporative Cooling Scale/Corrosion Inhibitor	Wet Surface Air Cooled Chemical Feed Shelter (B2)	Tote	110 gal	gallons	1	110 gal	110	83	365	3,359
CL-1432	Potassium phosphate, tribasic 5- 10%; 1-Hydroxyethylidene-1,1- diphosphonic acid, tetrapotassium salt .5-1.0%; Tetrapotassium pyrophosphate 1-5%; Potassium	Evaporative Cooling Scale/Corrosion Inhibitor	Wet Surface Air Cooled Chemical Feed Shelter (B2)	Tank	150 gal	gallons	1	150 gallons	150	113	365	1674 lbs onsite daily

CT-709	Tetrapotassium pyrophosphate 40 70%	Wet SAC Passivation	Wet Surface Air Cooled Chemical Feed Shelter (B2)	Drum	55 gal	gallons	1	55 gal	55	41	365	792 lbs onsite daily
CROSSTRANS 106 and 208	mineral oil	mineral oil	Electrical Equipment: Alternate Power Transformer (E12)	Transformer	550 gal	gallons	1	550 gal	550	550	365	550 lb onsite daily
MSDS #778984	Turbine Oil	lube oil	Combustion Turbine-A HRSG (G2)	boiler feedwater pump	141 gal	gallons	2	282 gal	282	212	365	2,045 lb onsite daily
MSDS #778984	Turbine Oil	lube oil	Combustion Turbine-B HRSG (G2)	boiler feedwater pump	141 gal	gallons	2	282 gal	282	212	365	2,045 lb onsite daily
	Sulfuric Acid 98% (66 degree Baume 93%)		Zero Liquid Discharge AreaSite Feature #21)	Tote	325 gal	gallons	1	325 gal	325	244	365	4,986
	Aqueous Ammonia (19%)		Aqueous Ammonia Storage Tank (M5)	Tank	20,000 gal	gallons	1	20,000 gal	20,000	15,000	365	154,971
Shell Turbo Fluid DR 46	Trixyly Phosphate (60-100%)	Steam Turbine Hydraulic Oil	Steam Turbine (E14)	Tank	500 gal	gallons	1	500 gal	500	400	365	
DOWFROST* 30 Heat Transfer Fluid	Propylene Gycol (30%)	propylene gycol in the water bath heater	Water Bath Heater (Site Feature #85)	In water bath heater	16,662 gal	gallons	1	16,662 gal	16,662	12,497	365	
Carbon Dioxide	Carbon Dioxide, Gas (99%)		Near STG	compressed gas cylinder	436 cu ft	cu ft	72	31392 cu ft	31,392	23,544	365	
Gasoline	Gasoline	Gasoline	Hazardous Materials Storage Area (M2)	Drum	55 Gal	gallons	2	110 gallons	110	55	365	3000 gallons
Diesel	Diesel	Diesel	Hazardous Materials Storage Area (M2)	Drum	55 Gal	gallons	2	110 gallons	110	55	365	2200 gallons

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Appendix 3, NOISE-8

Pacific Gas and Electric Company®

Per Noise-8, the following is required: "In the first annual compliance report after the receipt of a complaint, the project owner shall include documentation certifying that:

1) the noise-attenuating upgrades were installed on the specified residence at the project owner's expense;

2) the noise attenuating upgrades were already a feature of the residence;

3) installation was offered but refused by the owner; or 4) residential use by the complainant was ceased.

There were no Noise Complaints made by the owners or occupants of any of the existing residences located at ML1, ML2, or RC1 during operation of the CGS in 2019. There have been no noise complaints to date from anyone.

Pacific Gas and Electric Company®

Appendix 4, SOIL & WATER-2

2018-2019

ANNUAL REPORT

FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2018 through June 30, 2019

Retain a copy of the completed Annual Report for your records.

Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers, and e-mail addresses of the Regional Board contacts, as well was the Regional Board office addresses, can be found at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

General Information

A. Facility Information

WDID: 5S06I022929

Business Name: Colusa Generating Station

Physical Address: 4780 Dirks Rd

City: Maxwell

State: CA

Zip: 95955

Contact Person: Steve Rovall

Phone: 530-934-9061

Email: sgr8@pge.com

Standard Industrial Classification (SIC) Codes: 4911-Electric Services

B. Facility Owner Information

Business Name: Pacific Gas Electric Co

Mailing Address: PO Box 398

City: Maxwell

State: CA

Zip: 95955

Contact Person: steve royall

Phone: 530-934-9061

Email: sgr8@pge.com

C. Facility Billing Information

Business Name: Pacific Gas Electric Co

Mailing Address: PO Box 398

City: Maxwell

State: CA

Zip: 95955

Contact Person: Tim Wisdon

Phone: 530-934-9061

Email: T1WY@pge.com

Question Information

1. Has the Discharger conducted monthly visual observations (including authorized and unauthorized Non-Storm Water Discharges and Best Management Practices) in accordance with Section XI.A.1?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

2. Has the Discharger conducted sampling event visual observations at each discharge location where a sample was obtained in accordance with Section XI.A.2?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

3. Did you sample the required number of Qualifying Storm Events during the reporting year for all discharge locations, in accordance with Section XI.B?

☐ Yes ☒ No

If No, see Attachment 1, Summary of Explanation.

4. How many storm water discharge locations are at your facility?

1

5. Has the Discharger chosen to select Alternative Discharge Locations in accordance with Section XI.C.3?

☐ Yes ☒ No

6. Has the Discharger reduced the number of sampling locations within a drainage area in accordance with the Representative Sampling Reduction in Section XI.C.4?

☐ Yes ☒ No

6.1. Has the Discharger reduced the frequency of sampling at the facility area in accordance with the Sample Frequency Reduction in Section XI.C.7?

☐ Yes ☒ No

7. Permitted facilities located within an impaired watershed must assess for potential pollutants that may be present in the facility's industrial storm water discharge. Using the table below, populated based on the facility's location, indicate the presence of the potential pollutant at the facility.

The facility is not located within an impaired HUC 10 watershed. You are not required to select any Industrial Pollutants. Skip Questions 8 and 9.

8. Has the Discharger included the above pollutants in the SWPPP pollutant source assessment and assessed the need for analytical monitoring for the pollutants?

☒ Yes ☐ No

If No, what date will the parameter(s) will be added to the SWPPP and Monitoring Implementation Plan?

9. Were all samples collected in accordance with Section XI.B.5?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

10. Has any contained storm water been discharged from the facility this reporting year?

☐ Yes ☒ No

If Yes, see Attachment 1, Summary of Explanation.

11. Has the Discharger conducted one (1) annual evaluation during the reporting year as required in Section XV?

☒ Yes ☐ No

If Yes, what date was the annual evaluation conducted? 06/26/2019

If No, see Attachment 1, Summary of Explanation.

12. Has the Discharger maintained records on-site for the reporting year in accordance with XXI.J.3?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

13. Did additional NAL exceedances occur in the same drainage area for the facility's Level 2 parameter(s) (if no Level 2 parameters, select No)?

☒ Yes ☐ No

14. Was the Level 2 ERA Technical Report updated (if no Level 2 parameters, select No)?

☐ Yes ☒ No

If No, explain:

Colusa Generating Station's initial ERA Level

If your facility is subject to Effluent Limitation Guidelines in Attachment F of the Industrial General Permit, include your specific requirements as an attachment to the Annual Report (attach as file type: Supporting Documentation).

ANNUAL REPORT CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel propoerly gether and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: stephen royall

Title: director Date: 07/08/2019

2018-2019

Annual Report for WDID 5S06I022929

Summary of Explanations

Explanation Question	Explanation Text
Question 3	There was only one Qualifying Storm Event (QSE) that resulted in discharge of storm water from the site during the first half of the reporting year (July 1, 2018 through December 31, 2018), so only one QSE was sampled during that period. Four QSEs were sampled during the second half of the reporting year (January 1, 2019 through June 30, 2019).

Summary of Attachments

Attachment Type	Attachment Title	Description	Date Uploaded	Part Number	Attachment Hash
Supporting Documentation	ELG Steam Electric Power Generating Facility Applicability 2018-2019	Discussion of applicability of ELGs for Steam Electric Power Generating Facilities to Colusa Generating Station.	07/03/2019	null/null	66f63089f39268a3950d2dad95015555ca2c71a205efea8e8f626806882e4

2018-2019

Annual Report for WDID 5S06I022929

List of Identified Pollutants within the Impaired Watershed

Parameter	Pollutant	Present at Facility?

EXCEEDANCE RESPONSE ACTION LEVEL 2 TECHNICAL REPORT

December 30, 2018

Prepared for
Pacific Gas and Electric Company – Colusa Generating Station
4780 Dirks Road
Maxwell, California 95955

Waste Discharge Identification
5S06I022929

Prepared by
Terraphase Engineering Inc.
1404 Franklin Street, Suite 600
Oakland, California

QISP
Hans Kramer, QISP # 00153

Project Number 0234.002.001

terraphase engineering

CONTENTS

CERTIFICATION

Approval and Certification of the Level 2 ERA Technical Report:

Facility Name: Pacific Gas and Electric Company

Waste Discharge Identification (WDID): 5S06I022929

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons that manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Steve Royall, Duly Authorized Representative

Date

1.0 INTRODUCTION AND OVERVIEW

1.1 Introduction and Demonstration Selection

This Exceedance Response Action (ERA) Level 2 Technical Report (Report) has been prepared to discuss responses to Numeric Action Level (NAL) exceedances at the Pacific Gas and Electric Company (PG&E) Colusa Generating Station (Facility) in Maxwell, California. This Plan addresses all parameters entering Level 2 ERA exceedance status for the 2017-2018 reporting year at the Facility.

This Report includes an Industrial Activity Best Management Practices (BMP) Demonstration addressing implementation of BMPs first presented in the preceding ERA Level 2 Action Plan (Action Plan) dated December 22, 2017. This Report has been prepared in accordance with the 2015 California General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit) by a registered Qualified Industrial Stormwater Practitioner (QISP).

1.2 Facility Information

The Facility is located at 4780 Dirks Road, Maxwell, California and is owned and operated by PG&E. The Facility produces electricity through the use of two natural-gas-fired combustion turbines and a steam powered generator. The operating portion of the site is approximately 19 acres and is located within a 100-acre parcel leased from Holthouse Ranch. The Facility consists of 26% impervious surfaces (buildings/equipment and pavement/concrete), while the remaining area is gravel and a stormwater detention basin.

A Site Plan provided as Figure 1 shows the Facility layout, drainage areas, and storm water controls.

1.3 Summary of Response Actions

A new stormwater BMP was installed on 12/20/2017 inside the detention basin to reduce sediment discharge from the basin as well as ionically adsorb Iron particulates as storm water passes through the BMP. The BMP consists of Filtrexx SiltSoxx wattles with metal-absorbent Metalloxx material included. The wattles are placed as a check dam on top of the gravel berm to remove sediment and Iron prior to storm water discharge from the basin.

2.0 NAL EXCEEDANCES AND POLLUTANT SOURCES

2.1 NAL Exceedances

This Report addresses responses to the exceedances listed in Table 1.

Table 1: NAL Exceedances

Constituent	Reporting Year(s) and ERA Level
Iron	2016-2017: Level 1 2017-2018: Level 2

The average annual NAL for Iron was exceeded during the 2015-2016 and 2016-2017 reporting years. Beginning in 2017, after installation of the BMPs described in the Level 2 Action Plan, iron results were reduced below the NAL for all samples (there had been three), until November 29, 2018. Due to the result from November 29, 2018, the Facility is not yet eligible to return to Baseline status. It should be noted that the November 29, 2018 event exceeded the 85th percentile 24-hour event precipitation depth, based on the Sacramento State California Phase II LID Sizing Tool (based on climate station "COLUSA 2 SSW").

No other constituents have entered ERA Level 1 or 2 at the Facility at any time.

2.2 Industrial Pollutants and Sources

The iron NAL exceedances are likely caused by the industrial operations and pollutant sources listed in Table 2.

Table 2: Industrial Pollutant Sources Potentially Contributing to NAL Exceedance

Constituent	Location	Industrial Activity	Industrial Pollutant
Iron	Combustion Turbines (Main power plant area)	Power Plant Operations	Iron Particulates
Iron	Material storage area located at the south side of the facility west of the warehouse	Material storage, specifically pipe and other steel products	Iron Particulates/oxidation
Iron	Air Cooled Condenser (west of combustion turbines)	Steam Cooling	Iron/oxidation (Large exposed metal surfaces)

Outfall CGS-01 is located at the southwest corner of the Facility and is the only discharge location for runoff from the Facility. A stormwater detention basin and outflow weir is located in the southwest corner prior to Outfall CGS-01.

3.0 LEVEL 2 ERA ACTIONS – BMP IMPLEMENTATION

3.1 Previous BMP and ERA Analysis

Minimum mandatory BMPs required by the General Permit were previously implemented at the Facility but were unable to adequately control Iron at Outfall CGS-01. BMPs implemented prior to the ERA Level 1 assessment included drain inlet filters, storm-resistant shelters, vegetated swale, oil/water separators, gravel caps, the detention basin, regular sweeping, secondary containment, and spill kits, among others.

The ERA Level 1 assessment for the Facility determined additional sweeping, coating steel material racks, and removing accumulated sediments within the basin was warranted. These improvements reduced the total Iron load but were not successful at reducing total Iron levels below the NAL.

The Level 2 Action Plan suggested Filtrexx Siltsoxx with Metalloxx wattles be installed at the detention basin discharge, which did control iron levels and maintain them below the NAL, until the greater-than-85th-percentile, 24-hour precipitation event on November 29th.

3.2 ERA Level 2 BMP Implementation

BMP improvements proposed in the Level 2 Action Plan included the installation of Filtrexx SiltSoxx with Metallox wattles as a filtration weir at the discharge of the detention basin.

3.2.1 Outfall CGS-01 BMP Installation

PG&E completed installation of the Filtrexx Siltsoxx at Outfall CGS-01 on December 20, 2017. The BMPs were installed according to manufacturer standards and industry best practices. Applicable BMP product documents were included with the Level 2 Action Plan.

The BMP includes four Filtrexx 8-inch-diameter wattles containing Metallox media for sediment and metals removal. The wattle was cut into four equal-length pieces and stacked in a diamond shape. One is placed directly in the soil, three more are placed on top, and wooden stakes are installed to hold all wattles in place. The wattles were staked to an existing gravel berm prior to the discharge point.

The wattles were installed surrounding the discharge weir, as shown in Figure 1 Storm Water Flows and BMPs. Wattles were installed according to the *Filtrexx Section 1: Construction SWPPP Cut Sheet for Filtrexx Check Dams – Siltsoxx (Cut Sheet)* (included in the Level 2 Action Plan). Wattles were positioned so flow must pass through stacked wattles prior to entering the basin outfall weir.

3.2.2 Outfall CGS-01 BMP Evaluation

Following installation Iron has been reduced to below the NAL in site discharges in all but the latest results, presented in the table below. In October 2018 the originally-installed wattles were replaced with a new set.

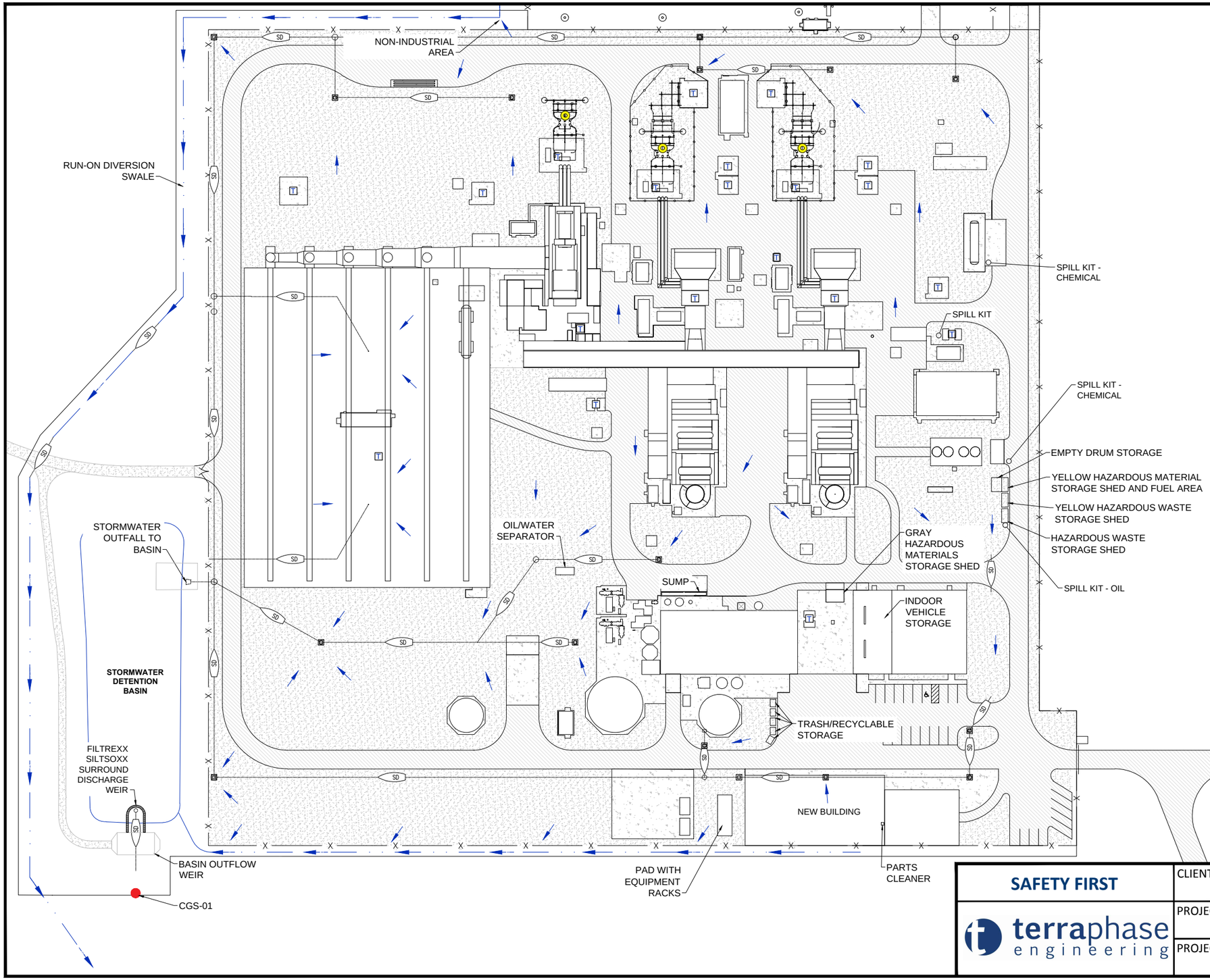
Date	Iron (mg/l)
2/2/2017	0.79
1/9/2018	0.40
4/6/2018	0.78
11/29/2018	2.20

Given the most recent result exceeds the NAL, additional BMPs being considered for implementation in 2019 include the following:

- Install geotextile fabric on the pond floor between the existing weir formed by the Filtrexx wattles and the existing outlet riser, to reduce potential for disturbance of sediment in the area immediately behind the weir.
- Attach a lateral pipe to the discharge riser low-flow orifice, extending into the annular space between the existing Filtrexx wattles and discharge riser, with slits cut in the pipe wall and additional Filtrexx wattles and/or fabric coating the slits and pipe entrance.
- Install additional Filtrexx wattle between the existing wattles and the discharge riser.
- Install a silt curtain in the basin.

These options will be evaluated and the chosen BMP(s) will be implemented in 2019.

FIGURES



LEGEND

- DRAIN INLET WITH SEDIMENT FILTER
- STORM WATER DISCHARGE/SAMPLING POINT
- FACILITY BOUNDARY
- PORTABLE RESTROOM
- TRANSFORMER
- SULFUR HEXAFLOURIDE BREAKER
- ASPHALT CONCRETE
- CONCRETE
- GRAVEL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

N

0' 60' 120' 240'

Approximate Scale in Feet

SAFETY FIRST

terraphase engineering

CLIENT: PG&E

PROJECT: Colusa Generating Station
Maxwell, California

PROJECT NUMBER: 0234.002.001

Storm Water Flow and BMPs

Figure 1

December 11, 2018

Pacific Gas & Electric-Colusa Generating
P.O. Box 398
Maxwell, CA 95955

Lab ID : CH 1890025
Customer : 7-10931

Laboratory Report

Introduction: This report package contains total of 5 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(2 pages)	: Results for each sample submitted.
Quality Control	(1 page)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
CGS-SW01-112918	11/29/2018	11/30/2018	CH 1890025-001	STM

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

200.7	12/04/2018:217688 All analysis quality controls are within established criteria
3010	12/04/2018:214281 All preparation quality controls are within established criteria

Inorganic - Wet Chemistry QC

1664A	12/06/2018:214410 All preparation quality controls are within established criteria
2540D	12/03/2018:214221 All preparation quality controls are within established criteria

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TEL: (559)734-9473
FAX: (559)734-8435
CA ELAP Certification No. 2810

December 11, 2018 Lab ID : CH 1890025
Pacific Gas & Electric-Colusa Generating Customer : 7-10931

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2018-12-12

December 11, 2018

Lab ID : CH 1890025-001
Customer ID : 7-10931

Pacific Gas & Electric-Colusa Generating
P.O. Box 398
Maxwell, CA 95955

Sampled On : November 29, 2018-11:14
Sampled By : Daryl
Received On : November 30, 2018-12:12
Matrix : Stormwater

Description : CGS-SW01-112918
Project : Colusa Power Generating Station WDID# 5S06I022929

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation Method	Sample Preparation ID	Sample Preparation Time	Sample Analysis Method	Sample Analysis ID	Sample Analysis Time
Metals, Total												
Iron	2.20	0.05	0.0014	mg/L	1		3010	214281	12/04/18 14:00	200.7	217688-IT204	12/04/18-19:41AC
Wet Chemistry												
Oil and Grease	ND	3	1.9	mg/L	1.087	U	1664A	214410	12/06/18 15:45	1664A	217926-WT215	12/10/18-11:05AMM
Solids, Total Suspended (TSS)	48.8	3.3	0.49	mg/L	3.3333		2540D	214221	12/03/18 17:35	2540D	217667-WT215	12/04/18-14:30jba

DQF Flags Definition:
U Constituent results were non-detect.

ND=Non-Detected. PQL=Practical Quantitation Limit.

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December 11, 2018

Pacific Gas & Electric-Colusa Generating
P.O. Box 398
Maxwell, CA 95955

Lab ID : CH 1890025-001
Customer ID : 7-10931

Sampled On : November 29, 2018-11:14
Sampled By : Daryl
Received On : November 30, 2018-12:12
Matrix : Stormwater

Description : CGS-SW01-112918
Project : Colusa Power Generating Station WDID# 5S06I022929

Sample Result - Support

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation Method	Sample Preparation ID	Sample Preparation Time	Sample Analysis Method	Sample Analysis ID	Sample Analysis Time
Field Test												
pH (Field)	7.03			units	1				11/29/18 11:14	4500-H B		11/29/18 11:14

ND=Non-Detected. PQL=Practical Quantitation Limit.

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December 11, 2018 Lab ID : CH 1890025
Pacific Gas & Electric-Colusa Generating Customer : 7-10931

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Iron	200.7	12/04/18:217688AC	CCV	ppm	5.000	99.8 %	90-110	
			CCB	ppm		-0.0001	0.03	
			CCV	ppm	5.000	100 %	90-110	
			CCB	ppm		0.0007	0.03	
	3010	12/04/18:214281ac	Blank	mg/L		ND	<0.05	
			LCS	mg/L	4.000	98.0 %	85-115	
			MS	mg/L	4.000	91.6 %	75-125	
		(SP 1815978-001)	MSD	mg/L	4.000	88.0 %	75-125	
			MSRPD	mg/L	0.8000	3.6%	≤20.0	
			PDS	mg/L	4.000	90.8 %	75-125	
Wet Chem								
Oil and Grease	1664A	12/06/18:214410AMM	Blank	mg/L		ND	<3	
			LCS	mg/L	44.89	98.3 %	78-114	
			BS	mg/L	44.89	82.7 %	78-114	
			BSD	mg/L	44.89	95.7 %	78-114	
			BSRPD	mg/L	44.89	14.6%	≤18	
Solids, Suspended	2540D	12/03/18:214221jba	Blank	mg/L		ND	<1	
			LCS	mg/L	50.11	95.8 %	61-112	
			LCS	mg/L	50.11	93.8 %	61-112	
		(SP 1815781-001)	Dup	mg/L		1.7%	20	
		(SP 1815781-004)	Dup	mg/L		3.3%	20	

Definition

PDS	: PDS failed, matrix - Post Digestion Spike (PDS) not within Acceptance Range (AR) because of matrix interferences affecting this analyte. Data was accepted based on the LCS recovery.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

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CHAIN OF CUSTODY
AND ANALYSIS REQUEST DOCUMENT

Client: Pacific Gas & Electric-Colusa Generating
Customer Number: 7010931
Address: P.O. Box 398
Maxwell, CA 95955

Phone: (530)934-9007 Fax: (530)934-9024
Email Address: DSSO@pge.com
Contact Person: Daryl Sattelberg
Project Name: Colusa Power Generating Station WDID#5S061022929
Purchase Order Number:
Quote Number:

Rush Analysis: ☐ 5 Day ☐ 4 Day ☐ 3 Day ☐ 2 Day ☐ 24 hour
Rush pre-approval by lab (initals): _____
Electronic Data Transfer: ☐ No ☐ State ☐ Client Other: _____

Sampler(s): Daryl Sattelberg
Sampling Fee: _____ Pickup Fee: _____
Compositor Setup Date: _____ Time: _____

Lab Number: 1890025

TEST DESCRIPTION AND ANALYSES REQUESTED

Samp Num	Location Description	Date Sampled	Time Sampled	Method of Sampling: Composite (C) Grab (G)	Number of Containers	Type of Containers: (G)Glass (P)Plastic (V)VOA (MT)Metal Tube	Potable (P) Non-Potable (NP) Ag Water (AgW)	(SW) Surface Water (MW) Monitoring Well (GW) Ground Water (TB) Travel Blank (WW) Waste Water (DW) Drinking Water	(S) Soil (SLG) Sludge (SLD) Solid (O) Oil	BacT: (Sys) System (SRC) Source (W) Waste	BacT: (ROUT)Routine (RPT)Repeat (OTH)Other (RPL)Replace	(LT) Leaf Tissue (PET) Petiole Tissue (PRD) Produce	Preservative: (1) NaOH + ZnAc, (2) NaOH, (3) HCl (4) H2SO4, (5) HNO3, (6) Na2S2O3, (7) Other _____	metals Total, Fe	wet Chemistry - Oil & Grease - 1164	wet Chemistry - TSS	Field pH * Client provided #											
1	GS6-SW01-112918	11/29/18	1114	G	3	GP	NP	STM					4.5	X	X	X	7.03											

Remarks

Relinquished	Date:	Time:	Relinquished	Date:	Time:	Relinquished	Date:	Time:
Daryl	11/30/18	1212	SAM	11/30/18	1700	GSO		
Received By:	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**	**Received By:**	**Date:**	**Time:**
SAM	+	+	GSO	+	+		12/1/18	1455

Corporate Offices & Laboratory
853 Corporation Street
Santa Paula, CA 93060
TEL: (805)392-2000
Env FAX: (805)525-4172 / Ag FAX: (805)392-2063
CA ELAP Certification No.1573

Office & Laboratory
2500 Stagecoach Road
Stockton, CA 95215
TEL: (209)942-0182
FAX: (209)942-0423
CA ELAP Certification No. 1563

Office & Laboratory
563 E. Lindo Avenue
Chico, CA 95926
TEL: (530)343-5818
FAX: (530)343-3807
CA ELAP Certification No. 2670

Office & Laboratory
3442 Empresa Drive, Suite D
San Luis Obispo, CA 93401
TEL: (805)783-2940
FAX: (805)783-2912
CA ELAP Certification No. 2775

Office & Laboratory
9415 W. Goshen Avenue
Visalia, CA 93291
TEL: (559)734-9473
FAX: (559)734-8435
CA ELAP Certification No. 2810

Chain of Custody Number: 112918-01

Pacific Gas and Electric Company
WE DELIVER ENERGY.

Pacific Gas & Electric
Colusa Power Generating Station
4780 Dirks Road
Maxwell, CA 95955
Phone (530) 537-7078

SHIPPED TO: FGL Labs
563 E. Lindo Ave
Chico, CA 95926

CHAIN OF CUSTODY RECORD

SITE: Colusa Power Generating Station DATE: 11/29/2018 PAGE 1 OF 1

PROJECT NAME: 11-29-18 Stormwater Discharge Sample
PROJECT CONTACT: Daryl Sattelberg
Order # 2030127

SAMPLER (Name[s] and Signature[s])

Daryl Sattelberg
Print Signature

Print X Signature

TURN-AROUND TIME:

- ⊗ Standard (5 days)
- ☐ Expedite (3 Days)
- ☐ Rush (24 Hours)
- ☐ Other _____

CHEMICAL PRESERVATIVE(S):
Chemical preservative(s), if used, are indicated on the sample container.

ANALYTICAL METHODS

LINE ITEM	SAMPLE NO.	DATE	TIME	CAM17 Metals (EPA 6010/6020)	Oil & Grease (EPA 1664A)	IRON Only (EPA 200.7)	Total Suspend Solids- TSS (SM2540-D)	BTEX (EPA 8260)	Matrix Type	Container Type	Sample Location	Sample Collection Composition	Number of Containers	pH Reading (If Applicable)	OBSERVATIONS/COMMENTS:
1	CGS-SW01-112918	11/29/2018	1114		X	X	X		W	P/A	A	D	2/1	7.03	pH reading taken at 1122 on 11/29/18
2															
3															
4															
5															
6															
7															
8															
9															
10															

MATRIX TYPE:
S = Soil
W = Water
O = Other _____

CONTAINER TYPE:
G = Glass Jar
P = Poly Bottle
S = Stainless Steel Liner
B = Brass Liner
V = 40mL VOA
A = Amber Glass Bottle
O = Other _____

SAMPLE LOCATION:
A= Stormwater Discharge Point 1
B= _____
C= _____

SAMPLE COLLECTION COMPOSITION:
D = Discrete
C = Composite

FIELD QUALITY CONTROL SAMPLES:
Trip Blank Yes ☐ No ☐
Field Blank Yes ☐ No ☐

RELINQUISHED BY: DARYL SATTELBERG	SIGNATURE:	COMPANY: Pacific Gas & Electric	DATE: 11/30/18	TIME: 12:12	TOTAL NUMBER OF CONTAINERS: 3
RECEIVED BY: Sam	SIGNATURE:	COMPANY:	DATE: 1	TIME: 1	METHOD OF SHIPMENT: PGE DRO/AT LAB
RELINQUISHED BY: Sam	SIGNATURE:	COMPANY:	DATE: 11/30/18	TIME: 1700	SPECIAL SHIPMENT / HANDLING / STORAGE REQUIREMENTS: Sample(s) on ice? Yes ☒ No ☐
RECEIVED BY: GSO	SIGNATURE:	COMPANY:	DATE: 1	TIME: 1	

1890025

Inter-Laboratory Condition Upon Receipt (Attach to COC)

Sample Receipt at: STK CC (CH) VI

1. Number of ice chests/packages received: 01 C Shipping tracking # _____
2. Were samples received in a chilled condition? Temps: Rai / ____ / ____ / ____ / ____
   Surface water SWTR bact samples: A sample that has a temperature upon receipt of >10° C, whether iced or not, should be flagged unless the time since sample collection has been less than two hours.

3.	Do the number of bottles received agree with the COC?	(Yes)	No	N/A
4.	Were samples received intact? (i.e. no broken bottles, leaks etc.)	(Yes)	No	
5.	VOAs checked for Headspace?	Yes	No	(N/A)
6.	Were sample custody seals intact?	Yes	No	(N/A)
7.	If required, was sample split for pH analysis?	Yes	No	(N/A)
8.	Were all analyses within holding times at time of receipt?	(Yes)	No	
9.	Verify sample date, time and sampler name	(Yes)	No	

Sign and date the COC, place in a ziplock and put in the same ice chest as the samples.
Sample Receipt Review completed by (initials): SMK

Sample Receipt at SP:

1. Were samples received in a chilled condition? Temps: 1 / ____ / ____ / ____ / ____
   Acceptable is above freezing to 6E C. If many packages are received at one time check for tests/H.T.'s/rushes/
2. Shipping tracking numbers: 542958854

3.	Do the number of bottles received agree with the COC?	(Yes)	No	N/A
4.	Were samples received intact? (i.e. no broken bottles, leaks etc.)	(Yes)	No	
5.	Were sample custody seals intact?	Yes	No	(N/A)

Sign and date the COC, obtain LIMS sample numbers, select methods/tests and print labels.

Sample Verification, Labeling and Distribution:

1.	Were all requested analyses understood and acceptable?	(Yes)	No		
2.	Did bottle labels correspond with the client's ID's?	(Yes)	No		
3.	Were all bottles requiring sample preservation properly preserved? [Exception: Oil & Grease, VOA and CrVI verified in lab]	(Yes)	No	N/A	FGL
4.	VOAs checked for Headspace?	Yes	No	(N/A)	
5.	Have rush or project due dates been checked and accepted?	Yes	No	(N/A)	
6.	Were all analyses within holding times at time of receipt?	(Yes)	No		

Attach labels to the containers and include a copy of the COC for lab delivery.
Sample Receipt, Login and Verification completed by (initials): CTC

Discrepancy Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted: _____ Phone Number: _____
   Initiated By: _____ Date: _____
   Problem:
   Resolution:

2. Person Contacted: _____ Phone Number: _____
   Initiated By: _____
   Problem:
   Resolution:

(Please use the back of this sheet for additional comments contacts)

(7-10931)
Pacific Gas & Electric-Colusa Generatin
CH 1890025
CTC-11/30/2018-17:05:22

2018 - 2019

AD HOC MONITORING REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

WDID No: 5S06I022929

Operator Information:

Name: Pacific Gas Electric Co

Address: PO Box 398

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Facility Information:

Name: Colusa Generating Station

Address: 4780 Dirks Rd

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Event Information:

Event Type: Qualifying Storm Event Event ID: 1054008

Certified By:

Name: stephen royall Date:

WDID: 5S06I022929

Event ID: 1054008

DATA SUMMARY

Monitoring Location	Sample Date/Time	Estimated Discharge Date/Time	Parameter	Result Qualifier	Results	Units	Analytical Method	Method Detection Limit	Reporting Limit	Analyzed By
Sediment Pond Discharge	Tue Jan 15 06:54:00 PST 2019	Tue Jan 15 04:00:00 PST 2019	Iron, Total	=	2.4	mg/L	E200.7	0.0091	0.1	LAB
Sediment Pond Discharge	Tue Jan 15 06:54:00 PST 2019	Tue Jan 15 04:00:00 PST 2019	Oil and Grease	=	1.4	mg/L	E1664A	0.66	1	LAB
Sediment Pond Discharge	Tue Jan 15 06:54:00 PST 2019	Tue Jan 15 04:00:00 PST 2019	pH	=	7.65	SU	pH_Field	0.01	1	SELF
Sediment Pond Discharge	Tue Jan 15 06:54:00 PST 2019	Tue Jan 15 04:00:00 PST 2019	Total Suspended Solids (TSS)	=	46	mg/L	A2540D	2	2	LAB

WDID: 5S06I022929

Event ID: 1054008

ATTACHMENTS

Attachment Title	Description	Date Uploaded	Attachment Type	Attachment Hash	Doc Part No/Total Parts
Analytical Results		2019-04-17 13:57:29.0	Laboratory Results	da91ee5638ab811bf827b680e959d17944137d44c4f62d81350cbe5a79462b5	1/1
PH log		2019-04-17 13:57:29.0	Laboratory Results	ce652e88cb43232d09895d8d3e38edd62f5c876569b34c7b8091f52cdbe6ba	1/1

2018 - 2019

AD HOC MONITORING REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

WDID No: 5S06I022929

Operator Information:

Name: Pacific Gas Electric Co

Address: PO Box 398

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Facility Information:

Name: Colusa Generating Station

Address: 4780 Dirks Rd

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Event Information:

Event Type: Qualifying Storm Event Event ID: 1054160

Certified By:

Name: stephen royall Date:

WDID: 5S06I022929

Event ID: 1054160

DATA SUMMARY

Monitoring Location	Sample Date/Time	Estimated Discharge Date/Time	Parameter	Result Qualifier	Results	Units	Analytical Method	Method Detection Limit	Reporting Limit	Analyzed By
Sediment Pond Discharge	Sat Feb 02 09:30:00 PST 2019	Sat Feb 02 09:00:00 PST 2019	Iron, Total	=	2.05	mg/L	E200.7	0.0014	0.05	LAB
Sediment Pond Discharge	Sat Feb 02 09:30:00 PST 2019	Sat Feb 02 09:00:00 PST 2019	Oil and Grease	=	4.12	mg/L	E1664A	1.9	3	LAB
Sediment Pond Discharge	Sat Feb 02 09:30:00 PST 2019	Sat Feb 02 09:00:00 PST 2019	pH	=	8.12	SU	pH_Field	0.1	0.1	SELF
Sediment Pond Discharge	Sat Feb 02 09:30:00 PST 2019	Sat Feb 02 09:00:00 PST 2019	Total Suspended Solids (TSS)	=	32	mg/L	A2540D	0.49	2.4	LAB

WDID: 5S06I022929

Event ID: 1054160

ATTACHMENTS

Attachment Title	Description	Date Uploaded	Attachment Type	Attachment Hash	Doc Part No/Total Parts
pH cal and results	pH cal and results	2019-04-19 09:17:02.0	Supporting Documentation	35ddac903ec397b85f7932729c76527c754eef14b2e679a9839740975e50dc	1/1
lab results 2-2-19	lab results for 2-2-19 sample	2019-04-19 09:19:20.0	Laboratory Results	98eacffeb2907577f3b36e1ec54b33cdbb2282f449e9395353f4ab88d7dabf9	1/1

2018 - 2019

AD HOC MONITORING REPORT

FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

WDID No: 5S06I022929

Operator Information:

Name: Pacific Gas Electric Co

Address: PO Box 398

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Facility Information:

Name: Colusa Generating Station

Address: 4780 Dirks Rd

City: Maxwell State: CA Zip: 95955

Contact: steve royall

E-mail: sgr8@pge.com

Phone: 530-934-9061

Event Information:

Event Type: Qualifying Storm Event Event ID: 1054175

Certified By:

Name: stephen royall Date:

WDID: 5S06I022929

Event ID: 1054175

DATA SUMMARY

Monitoring Location	Sample Date/Time	Estimated Discharge Date/Time	Parameter	Result Qualifier	Results	Units	Analytical Method	Method Detection Limit	Reporting Limit	Analyzed By
Sediment Pond Discharge	Wed Feb 13 07:39:00 PST 2019	Wed Feb 13 07:00:00 PST 2019	Iron, Total	=	1.26	mg/L	E200.7	0.0014	0.05	LAB
Sediment Pond Discharge	Wed Feb 13 07:39:00 PST 2019	Wed Feb 13 07:00:00 PST 2019	Oil and Grease	ND		mg/L	E1664A	1.9	3	LAB
Sediment Pond Discharge	Wed Feb 13 07:39:00 PST 2019	Wed Feb 13 07:00:00 PST 2019	pH	=	7.75	SU	pH_Field	0.1	0.1	SELF
Sediment Pond Discharge	Wed Feb 13 07:39:00 PST 2019	Wed Feb 13 07:00:00 PST 2019	Total Suspended Solids (TSS)	=	19.5	mg/L	A2540D	0.49	2	LAB

WDID: 5S06I022929

Event ID: 1054175

ATTACHMENTS

Attachment Title	Description	Date Uploaded	Attachment Type	Attachment Hash	Doc Part No/Total Parts
2-13-19 lab report	2-13-19 sample results	2019-04-19 09:48:52.0	Laboratory Results	b44d9903e711f329e10f0b068cace6ea99c80edefb443d21c7f03fa70fb	1/1
2-13-19 pH cal and result	2-13-19 pH pen calibration doc and pH result	2019-04-19 09:48:53.0	Supporting Documentation	402d7959db46f66aa9c18c935fe3ced627b32a8968c021298c726a165ccef6e5	1/1

Pacific Gas and Electric Company®

Appendix 5, SOIL & WATER-7

Per Soil & Water 7 the following is required:" the project owner shall submit any related monitoring required by the agreement to the CPM in the annual compliance report. The project owner shall submit any notice if violations from the Glenn Colusa Irrigation District to the CPM within 10 days of receipt and fully explain the corrective actions taken in the next annual compliance report."

There is no reporting or monitoring requirement in the water agreement with the Glenn Colusa Irrigation District.

No notice of violations issued by GCID in the 2019 year.

Pacific Gas and Electric Company®

Appendix 6, SOIL & WATER-8

Pacific Gas and Electric Company®

Appendix 6, SOIL & WATER-8

All water used during 2019 was supplied by the Tehama Colusa Canal Authority. The total amount of water used during 2019 was 18,994,639 gallons.

Year	2019
CEC Plant ID	06-AFC-9
EIA Plant ID	

Section 1. Power Plant Water Supply

1a	Primary Water Supply Source	Agricultural Canal	1e	Backup Water Supply Source	NA
1b	Name of Primary Water Purveyor, Wastewater Supplier, or Well ID(s)	Tehema Colusa Canal Authority/Glenn Colusa Irrigation District	1f	Name of Backup Water Purveyor, Wastewater Supplier, or Well ID(s)	NA
1c	Primary Water Supply Average Total Dissolved Solids (mg/l)	90	1g	Backup Water Supply Average Total Dissolved Solids (mg/l)	
1d	Regional Water Quality Control Board	Central Valley Region Water Quality Control Board			NA

Section 2. Power Plant Water Use

2a *Check this box if water use at the power plant is not metered and cannot reasonably estimated.*

2b

Volume of Water Required (in gallons)	*Check the boxes below if the categorized water use is not metered and cannot reasonably be estimated or is not applicable.*						
	Sanitation	Landscaping	Solar Mirror Washing	Dust Suppression	Other Water Use	Daily Maximum	
January		0			218,958		
February		0			170,878		
March		0			208,032		
April		0			969,224		
May		0			201,380		
June		14,550			1,638,507		
July		14,320			3,317,528		
August		14,300			4,080,360		
September		13,545			3,148,232		
October		14,295			3,742,268		
November		8,930			1,034,168		
December		0			265,104		

2c	Metering Frequency	Recorded Daily	Metering Technology	Inline Analog Meter

Section 3. Power Plant Wastewater Disposal

3a *Check box if wastewater is not metered and cannot reasonably estimated.*

3b	Wastewater Disposal Method	Zero Liquid Discharge/Septic Tank
3c	Average Total Dissolved Solids (mg/l)	NA
3d	Equipment Manufacturer	Aquatech
3e	Year of Installation	2010
3f	Waste Reduction Equipment or Measures Taken	Zero Liquid Discharges
3g	Name of the Facility or Water Body Receiving the Wastewater	NA
3h	Notes: Process water is run through a crystallizer to remove solids and vaporize liquid	

3i

Volume of Discharged Waste (in gallons)	Daily Maximum	Monthly Total
January	NA	
February	NA	
March	NA	
April	NA	
May	NA	
June	NA	
July	NA	
August	NA	
September	NA	
October	NA	
November	NA	
December	NA	

CALTROL INC.
1385 PAMA LANE #111
LAS VEGAS, NV. 89119
PHONE: (877) 827-8131

Instrument Calibration Report

Attn: PG&E Colusa Generating Station

Magnetic Flow Meter

Tag/Instrument ID	**FT-9002-2**	Calibrated Range	**0 TO 250 Gal/M**
Description	**Mag-Meter**	Serial Number	**0395651**
Manufacturer	**Rosemount**	Model Number	**8732E**
Plant / Unit	**MAIN**	Calibration Type	**SCHEDULED**
System	**WATER**	Calibrated	**07-May-19**
Location	**WESTSIDE CANAL**	Scheduled	**06-May-20**

MagMeter Calibration

Stated Accuracy: % of Analog Output Required Accuracy(1): 0.50%

In Val	In Units	Out Val	Out Units	As Found	Error %	As Left	Error %
0.00	Gal/M	4.00	mA	4.00	0.00%	4.00	0.00%
3.00	Gal/M	5.60	mA	5.60	0.00%	5.60	0.00%
10.00	Gal/M	9.33	mA	9.34	0.03%	9.34	0.03%
30.00	Gal/M	20.00	mA	20.00	0.01%	20.00	0.01%
10.00	Gal/M	9.33	mA	9.34	0.03%	9.34	0.03%
3.00	Gal/M	5.60	mA	5.60	0.01%	5.60	0.01%
0.00	Gal/M	4.00	mA	4.00	0.00%	4.00	0.00%

Calibration Parameter Changes

	Customer Settings	Calibration Settings
Meter Tube Cal #:	*0897505908834005	1000015010000000
Units of Measure:	Gal/M	Ft/S
Lower Range Value:	0	0
Upper Range Value:	250	30
Coil Pulse Mode:	5 Hz	5 Hz

[X] All Settings returned to customer's Configuration

Totalizer Readings:	As Found	As Left
Gross:	93,403,940	93,403,940
Net:	76,111,400	76,111,400

Test Instruments Used During Calibration

Description	Manufacturer	Model Number	Serial Number	NIST Cert. Number
Hart Communicator	Emerson	Trex		N/A
Process Meter	Fluke	789	26020038	26020038
Flow Simulator	Rosemount	8714D	14611770	14611770 (Trace#)

Notes about this calibration

METER FOUND WITHIN TOLERANCE

QC Checklist:

N/A	Isolation valves
N/A	Filled legs
X	All wires relanded (If removed)
X	Verify data (model, tag, serial, mfg)

Calibration Result: **PASS**

Calibrated by: *JAMES BROWN*

Checkout By: *Jake Sanders*

Pacific Gas and Electric Company®

Appendix 7, SOIL & WATER-9

Pacific Gas and Electric Company®

Per Soil &Water 9, in regards to the Septic System, the following is required: "Any testing results or correspondence exchanged between the project owner and the California Department of Health Services or the Colusa County Environmental Health Division."

There is no testing required for the Septic System at the Colusa Generating Station and there was no formal correspondence with the Colusa County Department of Environmental Health. In 2012 we signed a maintenance contract with Hydrotec Solutions Inc., to provide quarterly maintenance of our septic system in accordance with our O&M manual. This company was recommended to us by the Colusa County Department of Environmental Health. They began their quarterly maintenance in the third quarter of 2012 and have continued thought the present.

Attached is their 2019 report.

PGE Colusa Generating Station

1ST Qtr., 2019

COMPLETED: **4/25/19**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

2019 PG&E Colusa Generating Station

	Date	# days	STEP Tank EC (dose ct.)	Net Cycles	ADC	STEP Tank ETM (hrs/min)	Net Run Time	ADRT
4th	12/6/18	106	375	360	3.40	20:20:58	19:31:09	0:11:03
1st	4/25/19	140	789	414	2.96	42:53:23	22:32:25	0:09:40
2nd								
3rd								
4th								

KEY:	
ADC	Ave. Daily Cycle
ADRT	Ave. Daily Run Time
EC	Event Counter
ETM	Elapsed Time Meter
NET	Month Total

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

PIEZOMETER MEASUREMENTS

4/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.38'

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

SCUM & SLUDGE MEASUREMENTS

4/25/19	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	0"	0"	0"	0"
SLUDGE	12"	10"	2"	2"

PGE Colusa Generating Station

2ND Qtr., 2019

COMPLETED: **7/25/19**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

2019 PG&E Colusa Generating Station

	Date	# days	STEP Tank EC (dose ct.)	Net Cycles	ADC	STEP Tank ETM (hrs/min)	Net Run Time	ADRT
4th	12/6/18	106	375	360	3.40	20:20:58	19:31:09	0:11:03
1st	4/25/19	140	789	414	2.96	42:53:23	22:32:25	0:09:40
2nd	7/25/19	91	1083	294	3.23	58:48:53	15:55:30	0:10:30
3rd								
4th								

KEY:	
ADC	Ave. Daily Cycle
ADRT	Ave. Daily Run Time
EC	Event Counter
ETM	Elapsed Time Meter
NET	Month Total

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

PIEZOMETER MEASUREMENTS

4/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.38'

7/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	**2.33'**	**DRY**
Piez #2	**2.44'**	**DRY**
Piez #3	**2.85'**	**1.17'**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

SCUM & SLUDGE MEASUREMENTS

4/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	0"	0"	0"	0"
SLUDGE	12"	10"	2"	2"

7/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	2"	0"	0"	0"
SLUDGE	14"	12"	2"	2"

PGE Colusa Generating Station

3RD Qtr., 2019

COMPLETED: **9/18/19**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

2019 PG&E Colusa Generating Station

	Date	# days	STEP Tank EC (dose ct.)	Net Cycles	ADC	STEP Tank ETM (hrs/min)	Net Run Time	ADRT
4th	12/6/18	106	375	360	3.40	20:20:58	19:31:09	0:11:03
1st	4/25/19	140	789	414	2.96	42:53:23	22:32:25	0:09:40
2nd	7/25/19	91	1083	294	3.23	58:48:53	15:55:30	0:10:30
3rd	9/13/19	50	1218	135	2.70	66:07:38	7:18:45	0:08:47
4th								

KEY:	
ADC	Ave. Daily Cycle
ADRT	Ave. Daily Run Time
EC	Event Counter
ETM	Elapsed Time Meter
NET	Month Total

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

PIEZOMETER MEASUREMENTS

4/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.38'

7/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.17'

9/13/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	**2.33'**	**DRY**
Piez #2	**2.44'**	**DRY**
Piez #3	**2.85'**	**1.85'**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

SCUM & SLUDGE MEASUREMENTS

4/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	0"	0"	0"	0"
SLUDGE	12"	10"	2"	2"

7/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	2"	0"	0"	0"
SLUDGE	14"	12"	2"	2"

9/13/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	**7"**	**0"**	**0"**	**0"**
SLUDGE	**15"**	**15"**	**3"**	**3"**

PGE Colusa Generating Station

4TH QTR, 2019

COMPLETED: **1/7/20**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

2019 PG&E Colusa Generating Station

	Date	# days	STEP Tank EC (dose ct.)	Net Cycles	ADC	STEP Tank ETM (hrs/min)	Net Run Time	ADRT
4th	12/6/18	106	375	360	3.40	20:20:58	19:31:09	0:11:03
1st	4/25/19	140	789	414	2.96	42:53:23	22:32:25	0:09:40
2nd	7/25/19	91	1083	294	3.23	58:48:53	15:55:30	0:10:30
3rd	9/13/19	50	1218	135	2.70	66:07:38	7:18:45	0:08:47
4th	12/20/19	98	1526	308	3.14	82:48:38	16:41:00	0:10:13

KEY:	
ADC	Ave. Daily Cycle
ADRT	Ave. Daily Run Time
EC	Event Counter
ETM	Elapsed Time Meter
NET	Month Total

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

PIEZOMETER MEASUREMENTS

4/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.38'

7/25/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.17'

9/13/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	2.33'	DRY
Piez #2	2.44'	DRY
Piez #3	2.85'	1.85'

12/20/19	TOTAL DEPTH	DEPTH TO H2O
Piez #1	**2.35'**	**DRY**
Piez #2	**2.33'**	**DRY**
Piez #3	**2.82'**	**DRY**

PGE Colusa Generating Station

Hydrotec Solutions, Inc.
P.O. Box 7908
Chico, CA 95927
(530) 891-4420

SCUM & SLUDGE MEASUREMENTS

4/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	0"	0"	0"	0"
SLUDGE	12"	10"	2"	2"

7/25/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	2"	0"	0"	0"
SLUDGE	14"	12"	2"	2"

9/13/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	7"	0"	0"	0"
SLUDGE	15"	15"	3"	3"

12/20/19

	SEPTIC		DOSING	
	INLET	OUTLET	INLET	OUTLET
SCUM	**12"**	**1"**	**0"**	**0"**
SLUDGE	**16"**	**13"**	**6"**	**1"**

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Appendix 8, TLSN-3

Per TLSN-3, the following is required: "Any reports of line-related complaints shall be summarized along with related mitigation measures for the first five years and provided in an annual report to the CPM."

There were no line related complaints in 2019.

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Appendix 9, VIS-1

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Per VIS-1, the following is required: "The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify:
a) the condition of the surfaces of all structures and buildings at the end of the reporting year; b) major maintenance activities that occurred during the reporting year; and
c) the schedule of major maintenance activities for the next year.

Surface coating applications for the most part remain in excellent condition after their completion in March 2011, as a result no maintenance activities occurred in 2017.

There is a possibility that some touch up painting may occur on the steam turbine duct where some heat issues effected the coatings. This is in an area that is not visible to the public.

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Appendix 10, VIS-3

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Per VIS-3, the following is required: The project owner shall report landscaping maintenance activities, including of dead or dying vegetation, for the previous year of operation in each annual compliance report."

During 2019 maintenance was completed by Sierra Integrated Services Inc. All vegetation is healthy and there is no dying vegetation. Sierra recommends continuing to water 5 minutes every other day for the summer months.

12 damaged sprinkler heads were changed out in 2019.

SIERRA
INTEGRATED SERVICES INC.

Dean Linville
Pacific Gas & Electric Company
Colusa Generating Station
4780 Dirks Road
Colusa, CA 94509

March 26, 2019

First Quarter 2019 Landscape Tree & Shrub Maintenance Report

An inspection was performed on the landscape trees and shrubs bordering the entrance of the facility. The trees were visually inspected for signs of structural issues, moisture/irrigation issues, and pest and diseases. Based on the observations most trees did not appear to have any of the above listed issues, however, there is another small Eucalyptus that has some die back towards the top. There were no obvious signs of stress, however, some leaves did have a slight discoloration and spotting. This tree will need to be monitored through the spring as well as the two shrubs noted in the Q4 report to the right of the gate. There was also weed growth around the drip canopy of the trees.

Recommendations

Continue to inspect and test irrigation system to ensure it is properly working and adequately supplying water to each tree. This will be especially important once the spring rains cease to provide soil moisture.

A weed free zone needs to be maintained around each tree as currently there is weed growth. Weeds can compete for nutrients and moisture and can create harborage and protection for rodents that can damage the tree bark.

Continued monitoring of the shrubs and tree of concern.

Anne-Marie Patterson
President
Pest Control Advisor/QAL
Sierra Integrated Services, Inc.
916-717-9631

SIERRA
INTEGRATED SERVICES INC.

Dean Linville
Pacific Gas & Electric Company
Colusa Generating Station
4780 Dirks Road
Colusa, CA 94509

June 12, 2019

Second Quarter 2019 Landscape Tree & Shrub Maintenance Report

An inspection was performed on the landscape trees and shrubs bordering the entrance of the facility. The trees were visually inspected for signs of structural issues, moisture/irrigation issues, and pest and diseases. Based on the observations most trees did not appear to have any of the above listed issues, however, there continues to be small Eucalyptus that has some dieback towards the top. The dieback does not appear to have increased so monitoring will continue. There were no obvious signs of stress, however, some leaves did have a slight discoloration and spotting. The shrubs to the south of the gate that were being monitored during Q1 do not appear to have any additional leaf burn or dieback. Additionally, the weed growth occurring around the base of the trees and shrubs noted in the Q1 report has been abated. The small oak closest to the gate entrance still continues to have some leaf and stem die-back which is visible each spring when leaves emerge.

Recommendations

Continue to inspect and test irrigation system to ensure it is properly working and adequately supplying water to each tree. This will be especially important now that the summer heat and winds have picked up.

Continue to maintain a weed free zone around each tree as currently there is weed growth. Weeds can compete for nutrients and moisture and can create harborage and protection for rodents that can damage the tree bark.

Continued monitoring of the shrubs and tree of concern. All others have continued stable status.

Anne-Marie Patterson
President
Pest Control Advisor/QAL
Sierra Integrated Services, Inc.
916-717-9631

SIERRA
INTEGRATED SERVICES INC.

Dean Linville
Pacific Gas & Electric Company
Colusa Generating Station
4780 Dirks Road
Colusa, CA 94509

October 5, 2019

Third Quarter 2019 Landscape Tree & Shrub Maintenance Report

An inspection was performed on the landscape trees and shrubs bordering the entrance of the facility. The trees were visually inspected for signs of structural issues, moisture/irrigation issues, and pest and diseases. Based on the observations most trees did not appear to have any of the above listed issues, however, there continues to be small Eucalyptus that has some dieback towards the top. The dieback looks to have progressed since the last inspection. There are still no obvious signs of stress, however, some leaves continue to have a slight discoloration and spotting. The shrubs to the south of the gate that were being monitored during Q1 have grown out of the leaf dieback and burn and look to be growing and healthy. No significant weed growth around the base of the trees and shrubs was observed.

Recommendations

Continue to inspect and test irrigation system to ensure it is properly working and adequately supplying water to each tree. As we enter into the fall and winter rainy season, the irrigation will need to be monitored more closely and adjusted according to rainfall conditions.

Continue to maintain a weed free zone around each tree and shrub. Weeds can compete for nutrients and moisture and can create harborage and protection for rodents that can damage the tree bark.

Continued monitoring of the tree of concern. All others have continued stable status.

Anne-Marie Patterson
President
Pest Control Advisor/QAL
Sierra Integrated Services, Inc.
916-717-9631

SIERRA
INTEGRATED SERVICES INC.

TJ Gomez
Pacific Gas & Electric Company
Colusa Generating Station
4780 Dirks Road
Colusa, CA 94509

January 6, 2020

Fourth Quarter 2019 Landscape Tree & Shrub Maintenance Report

An inspection was performed on the landscape trees and shrubs bordering the entrance of the facility. The trees were visually inspected for signs of structural issues, moisture/irrigation issues, and pest and diseases. Based on the observations most trees did not appear to have any of the above listed issues, however, there continues to be small Eucalyptus that has some dieback towards the top. The dieback looks to have progressed since the last inspection. There are still no obvious signs of stress, however, some leaves continue to have a slight discoloration and spotting. There are also some eucalyptus leaves that show some insect damage. There is also a pine located to the left of the main gate that is showing some significant needle browning, discoloration and drop. The tree will need to be monitored during Q1 2020. Some trees had fairly significant weed growth around the trunk and canopy zone.

Recommendations

Continue to inspect and test irrigation system to ensure it is properly working and adequately supplying water to each tree. With winter rains, irrigation should be significantly reduced or turned off.

Continue to maintain a weed free zone around each tree and shrub. Weeds can compete for nutrients and moisture and can create harborage and protection for rodents that can damage the tree bark.

Continued monitoring of the trees of concern. All others have continued stable status.

Anne-Marie Patterson
President
Pest Control Advisor/QAL
Sierra Integrated Services, Inc.
916-717-9631

Pacific Gas and Electric Company®

Appendix 11, Waste-5

Pacific Gas and Electric Company®

The Waste Management Plan was followed during 2019. The following pages reflect the practices that were utilized throughout the year.

TABLE 2-1
Characterization of Waste Streams at the Colusa Generating Station
Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
General Wastes				
Non-recyclable non-hazardous office and lunchroom waste	Waste paper, metal, plastic, cardboard, wood	Non-hazardous solid waste, based on waste management practices and staff training.	Commercial waste bins	Not required
Recyclable office materials	Waste paper, metal, plastic, cardboard	Not a waste, based on waste management practices and staff training.	Commercial recycling bins	Not required
Janitorial products and waste from their use	Janitorial products (e.g., window cleaner, floor stripper, wax, drain cleaners, etc.) may contain chemicals that are hazardous. These chemicals are consumed during normal use.	Use according to instructions on product labels does not constitute disposal. Discarded full-strength products may exhibit characteristics of ignitability, corrosivity, reactivity, or toxicity.	Empty containers of 5 gallons or less (meeting the definition of an empty container) can be disposed of in commercial waste bins. Discarded unused products will be characterized based on review of product labels and MSDSs and disposed of appropriately.	Not required
Used consumer electronic products and components	Cell phones, personal computers, computer perhipherals (e.g., printers), pagers, personal digital assistants, process control system components	Universal hazardous waste	Universal waste destination facility to be identified	Not required
Light tubes	Includes fluorescent light tubes, high-pressure sodium lamps, and other lamps that exhibit a characteristic of a hazardous waste.	Universal hazardous waste	Universal waste destination facility to be identified	Not required
Batteries	Rechargeable nickel-cadmium batteries, lithium batteries, alkaline batteries,	Universal hazardous waste	Universal waste destination facility to be identified	Not required

TABLE 2-1
Characterization of Waste Streams at the Colusa Generating Station
Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
	silver button batteries, mercury batteries, small sealed lead-acid batteries, carbon-zinc batteries, and any other batteries that exhibit a characteristic of a hazardous waste			
Lead acid batteries – automotive or large industrial	Contain lead and sulfuric acid	Recyclable hazardous waste	Destination facility to be identified	Not required
Off-specification chemicals	Unusable new products, materials that cannot be returned to the vendor, and expired materials (shelf-life exceeded)	Chemical products may be non-hazardous, listed hazardous wastes, or characteristic waste.	Non-hazardous waste will be discarded in commercial waste bins. Hazardous waste will be disposed appropriately following characterization based on product labels and MSDSs.	Not required; management to be determined based on product label and MSDS.
Spent sorbent	Varies with wastes absorbed. May contain oil, solvents, coolant, or diesel fuel. Listed solvents are not expected to be used at the facility.	Non-hazardous waste if used to absorb a non-hazardous liquid; non-RCRA hazardous waste if used to absorb oil; RCRA hazardous waste if used to absorb a listed solvent or material that causes the sorbent to become a characteristic or listed hazardous waste	Non-hazardous waste will be discarded in commercial waste bins. Oil-contaminated sorbent will be disposed as a non-RCRA hazardous waste based on generator knowledge. Other hazardous waste sorbent will be disposed based on either generator knowledge if the material absorbed in known or analysis if it is not known.	Not required except when the material being absorbed is not known.
Aerosol cans	Aerosol cleaners and lubricants may contain listed chemicals. In addition, aerosol propellants and materials may be ignitable. Materials may also be	Universal hazardous waste	Empty, expired unused, or partially used aerosol cans	Not required; management can to be determined based on product label and MSDS.

TABLE 2-1
Characterization of Waste Streams at the Colusa Generating Station
Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
	corrosive or reactive.			
Used oil	Used oil includes lubricating oil, gearbox oil, compressor oil, bearing oil, transformer oil, metal working oil, and hydraulic oil that is not mixed with solvents.	Non-RCRA hazardous waste	Evergreen Oil or similar used oil recycler	Testing to confirm total halogen concentration is less than 1,000 parts per million. Testing is typically provided as a service by the oil recycler.
Painting wastes	Large-scale work is contracted out. Paint wastes include cans of unused or partially used paint, empty paint cans, and paint contaminated materials (brushes, rollers, tarps, and wipes).	It is assumed that waist paints are hazardous wastes. Paint-contaminated material is typically non-hazardous unless disposed when the paint is still wet.	Discarded unused or partially used paint will be characterized based on review of product labels and MSDSs and will be disposed of appropriately.	None required
Biohazard wastes	Biohazard waste may result from first air operations.	Biohazard	Transport to a local hospital for disposal by incineration	None required
Sanitary wastewater	Wastewater from toilets, sinks, showers, and janitorial closets.	Non-hazardous. Waste management provisions include posting signs at sinks and training employees regarding materials prohibited from draining at sinks.	Delta Diablo Sanitation District treatment plant	Monitoring per Industrial Waste Permit
Used oil filters	Used oil filters are hazardous based on oil content and may exhibit hazardous characteristics for lead and other heavy metals.	Used oil filters are classified as recyclable hazardous wastes provided that they are managed per requirements including draining of free-flowing oil	Drained oil filters may be transported to an approved destination such as Evergreen Oil under a bill of lading, provided that requirements for used oil filter management have been met.	None required

TABLE 2-1
Characterization of Waste Streams at the Colusa Generating Station
Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
Reusable soiled textiles (shop towels)	Varies with material absorbed. May contain oil, solvents, or other chemicals.	May be managed as a recyclable material excluded from classification as a waste if managed in accordance with requirements for reusable soiled textiles.	Recycle at facility that is compliant with requirements for reusable soiled textiles.	None required
Empty product containers	Empty containers may contain residues that have hazardous characteristics. Care should be taken in handling empty containers previously holding ignitable materials as they may contain ignitable vapors.	Empty containers meeting the regulatory definition of empty (e.g. all contents have been poured out) may be disposed of as non-hazardous waste provided they also meet empty container management requirements.	Empty containers of 5 gallons or less may be disposed with commercial waste. Empty containers of greater than 5 gallons need to be labeled with the word “empty” and the date they were emptied and either sent for reconditioning or for scrap within one year of becoming empty.	None required
Scrap metal	Used metal parts	Recyclable materials (22 CCR 66261.6(a)(3)	Place in scrap metal bins for transportation to a scrap metal recycler.	None
Compressed gas cylinders	Cylinders containing pressurized oxygen, acetylene, argon, nitrogen, and calibration gas blends; may contain residual pressure.	Non-hazardous solid waste when empty	Return refillable cylinders to vendors. Dispose of non-refillable cylinders as non-hazardous waste.	None
Spent solvent, sludge, and filters from parts washers.	Water-based and hydrocarbon based spent solvent, sludge, and filters.	Hydrocarbon-based solvent is typically hazardous and is collected and recycled.	Contract a parts washer service to recycle parts washer spent solvent in accordance with regulation.	None required unless operations change or solvent changes.
Used blasting grit	Used blasting grit may contain metal from the parts processed as well as coating	The material will be collected for characterization prior to	Manage as a hazardous waste. The material will be disposed at an approved	The analysis to be performed will be based on the waste profiling requirements of the

TABLE 2-1
Characterization of Waste Streams at the Colusa Generating Station
Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
	residue.	disposal.	disposal facility in accordance with federal, state, and local regulations.	disposal facility.
Oil/water separator sludge	Material collecting on the bottom of the oil/water separator may include oil-contaminated metals and other solids.	The material will be managed has a hazardous waste based on waste analysis.	Manage as a hazardous waste. The material will be disposed at an approved disposal facility in accordance with federal, state, and local regulations.	The analysis to be performed will be based on the waste profiling requirements of the disposal facility.
Used engine coolant	Used engine coolants are mixtures of water and organic compounds such as ethylene glycol.	Spent coolants are typically non-RCRA hazardous wastes.	Recycle at Evergreen Oil or similar facility.	None required
Wet Surface Air Cooler (WSAC) Sludge	WSAC sludge is a mixture of ambient particulate matter and water.	Dependent on samples—likely non-hazardous. Class II/III landfill if nonhazardous; Class I if hazardous.	Store in bins. Bins are to be covered if rain is predicted. Storage is allowed until container is full. Waste will be transported off-site weekly.	Perform total analysis (i.e. TCLP, TTLP, WET, etc.) to characterize the waste. If process remains consistent through year, perform characterization 1x/year
Salt Cake	Residual concentrated brine solution	Dependent on samples—likely non-hazardous. Class II/III landfill if nonhazardous; Class I if hazardous.	Store in bins. Bins are to be covered if rain is predicted. Storage is allowed until container is full. Waste will be transported off-site weekly.	Perform total analysis (i.e. TCLP, TTLP, WET, etc.) to characterize the waste. If process remains consistent through year, perform characterization 1x/year.

MSDS = Material Safety Data Sheet.

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Table 2-1

Characterization of Waste Streams at the Colusa Generating

Station Waste Management Plan, PG&E Colusa Generating Station

Waste Stream	Characteristics	Classification	Disposal	Analysis Required
Soil & Rock	Excavated soil/rock From Oil spills	Depends on sample likely non-hazardous Class II/III if nonhazardous Class I if hazardous	Manage as a hazardous Waste. The material will disposed at an approved facility. In accordance with federal,state and local regulation	Preform total analysis (i.e., TPH,CAM17) to characterize the waste.

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Attachment D

Post-Certification Changes

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Per Com-7 Item 4 we are to provide; "A Summary of the current project operating status and an explanation of any significant changes to the facility operations during the year."

No significant changes were made at CGS in 2019.

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Attachment E

Summary of Missed Deadlines

Pacific Gas and Electric Company®

Per Com-7 Item 5 we are to provide: "An explanation for any submittal deadlines that have been missed, accompanied by an estimate of when the information will be provided"

No submittal deadlines were missed for 2019.

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Attachment F

Governmental Agency Submittals and Issuances

Pacific Gas and Electric Company

The following is a listing of filings submitted to, or permits issued by, other governmental agencies during the year;

CGS Agency Submittals; January 1, 2019 – December 31, 2019

Colusa County Air Pollution Control District

Quarterly Operating Report (Permit Condition 17) January 18, 2019; April 26, 2019; July 23, 2019; October 23, 2019

Breakdown Report – March 22, 2019

Deviation Report - July 17, 2019, Follow up Deviation Report July 29, 2019

Annual RATA/Source Test Results– December 29, 2019

Title V Annual Certification of Compliance – January 28, 2019

Title V Renewal received July 9, 2019, effective September 1, 2019

EPA

Semi Annual CEMs Report (X.G.5) – January 2019; July 31, 2019

CUPA

Revised Hazardous Materials Business Plan via CERS – January 30, 2019

State Water Resources Control Board

Annual Stormwater Report – July 8, 2019

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Attachment G

Projected Compliance Activities 2020

Pacific Gas and Electric Company®

Per Com-7 Item 7 we are to provide; "A projection of project compliance activities scheduled during the next year."

In 2020 PG&E intends to continue reporting on the standard required compliance items. These include but are not limited to:

- Quarterly CEMS Reports/Operations Reports
- Annual Compliance Reports
- Notifications of Source Testing and Associated Source Test Reports
- Annual Storm Water Report

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Attachment H

Additions to On-Site Compliance Files

Pacific Gas and Electric Company®

Per Com-7 Item 8 we are to provide; "A listing of this year's additions to the on-site compliance files."

All the above noted items in Attachment F which were submitted to agencies other than the CEC, as well as those items submitted to the CEC have been added to the site compliance files.

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Attachment I

Contingency Plan Evaluation

Pacific Gas and Electric Company®

Per Com-7 Item 9 we are to provide; "An Evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions for bringing the plan up to date."

Upon Review of the Site Contingency Plan there have been no changes in operations or company business practices to warrant changing of the on-site contingency plan for unplanned facility closure.

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Attachment J

Complaints / NOVs / Citations

Pacific Gas and Electric Company®

Per Com-7 Item 10 we are to provide: "A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters"

In 2019, the CGS received a Notice of Violation (NOV) from the Colusa County Air Pollution Control District (CCAPCD). It was the result of a breakdown of equipment, but since the CCAPCD does not have breakdown relief a NOV was issued with no monetary penalty. No other complaints, warnings or citations were issued in 2019.