



**Pacific Gas and  
Electric Company**

**Curt Russell**  
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GT&D Remediation

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October 13, 2010

Doug Snyder, Deputy Fire Marshal  
San Bernardino County Fire Department, Hazardous Materials Division  
Certified Unified Program Agency (CUPA)  
620 South "E" Street  
San Bernardino, CA 92415-0153  
Tel: (909) 386-8401

**Subject: Revision to Conditional Authorization Notification Package  
Pacific Gas and Electric Company, Topock Compressor Station  
Interim Measure No. 3 Groundwater Treatment System, Facility No. FA0009150**

Dear Mr. Snyder:

Enclosed are revised portions of the Conditional Authorization Notification Package for Pacific Gas and Electric Company's (PG&E) Interim Measure No. 3 Groundwater Treatment System (IM No. 3). The revisions are due to IM No. 3 operational reviews that identified a need to provide additional details for the process drain tank and collection tank, and a revised process flow diagram.

The IM No. 3 treatment system is used to treat groundwater containing chromium in concentrations exceeding the California hazardous waste threshold limit concentration. done

The original Conditional Authorization Notification Package was submitted to the San Bernardino County Fire Department, Hazardous Materials Division, Certified Unified Program Agency (CUPA) on August 26, 2004. The CUPA authorized IM No. 3 (Facility No. FA0009150) operation in a letter dated September 22, 2004. Two revisions to the Conditional Authorization Notification Package were submitted to the CUPA:

- October 22, 2007 to notify the CUPA of a treatment process change, that pH would be controlled by hydrochloric acid (HCl), as well as the originally stated sulfuric acid.
- August 10, 2009 to notify the CUPA of installation and operation of a new, modern, two-stage Reverse Osmosis (RO) unit that replaced the original RO unit.

The purpose of this submittal is to provide the CUPA with added detail to the description of the process drain tank system in **Attachment D – Revised Description of Waste Stream and Treatment**. The process drain tank has been designed to collect various process liquids and return them to the raw water tank to ensure that all the plant water is treated prior to discharge. The primary inputs to the process drain tank include the microfilter backwash, phase separator

drains, floor drains, rainwater, sample collection purge water, and spent microfilter membrane cleaning solutions. The spent microfilter cleaning solutions will include:

- acidic with a pH of 2.0 or below;
- acidic with a pH greater than 2.0; and
- basic with a pH less than 12.5.

The microfilter clean-in-place (CIP) solutions will drain into the microfilter CIP effluent holding tank (Tank T-503).

The microfilter cleaning solution with a pH of 2.0 or below will drain into Tank T-503 and be co-mingled with basic spent microfilter cleaning solution with a pH less than 12.5 to achieve target pH for introduction into the IM3 treatment process as pH control. Therefore, this microfilter cleaning solution with a pH of 2.0 or below is considered to be a recyclable material exempt from classification as a waste under the provisions of California Health and Safety Code (CHSC) Section 25143.2(b)(2), because it is being used or reused as a safe and effective substitute for a commercial product without being reclaimed. The acidic microfilter cleaning solution effluent will be re-circulated to the head of the IM3 plant to complete a process acidification step. Alternatively, the microfilter cleaning solution effluent may be hauled off-site as a waste product to a permitted disposal facility.

When using the microfilter cleaning solution effluent for IM3 acidification, PG&E manages this solution in compliance with the following requirements of CHSC Section 25143.9:

- labeled the tank with the words "Excluded Recyclable Material"
- included the material in the Hazardous Materials Business Plan
- comply with local ordinances requiring secondary containment, or with interim status standards for hazardous waste storage

The acidic microfilter cleaning solutions with a pH greater than 2.0 will also be introduced to Tank T-503 and co-mingled with basic spent microfilter cleaning solution with a pH less than 12.5 in order to achieve the 6.0 target pH in the process drain tank (Tank T-900) for introduction to raw extracted groundwater. The target pH for introducing the process drain tank solution to the raw extracted groundwater is 6.0.

PG&E is required to notify the CUPA whenever any of the information provided in the notification package changes. The CUPA's September 22, 2004 letter states: *"To revise the information, mail a cover letter to the above address explaining the changes, attach only the pages of your notification package that have changed, and re-sign and date at the signature space on page 1 (Facility Identification) of the notification forms."* The document revisions are attached, and include:

- Facility ID Form with owner/operator signature
- Attachment D – Revised Description of Waste Stream and Treatment Process
- Revised Process Flow Diagram

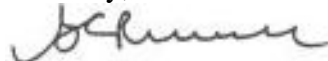
The following Table 1 lists the original documents, indicates if revisions are required, and summarizes any changes:

TABLE 1  
IM No. 3 Conditional Authorization Notification Document Revisions  
PG&E Topock, San Bernardino County, California

<b>Original Document Submitted 8/27/2004</b>	<b>Revised Document Submitted 10/22/2007 and/or 8/10/09</b>	<b>Revision Required for Additional Operational Details?</b>	<b>Summary of Revisions to Document</b>
Onsite Hazardous Waste Treatment Notification – Facility Page	Yes	Yes	Re-sign and date the signature space on the Facility Identification notification form.
Onsite Hazardous Waste Treatment Notification – Unit Page	No	No	None
Onsite Tiered Permitting, Conditionally Authorized (CA) Page – Waste and Treatment Process Combinations	No	No	None
Certification of Financial Assurance	No	No	None
Attachment A – Maps and Figures	Yes	Yes	Revised Process Flow Diagram.
Attachment B – Closure Cost Estimate and Closure Financial Assurance Mechanism	No	No	None
Attachment C – Tiered Permitting Phase I Assessment Checklist	No	No	None
Attachment C-1 – Corrective Action Consent Agreement	No	No	None
Attachment C-2 - Information Regarding Releases Since Issuance of the Corrective Action Consent Agreement	No	No	None
Attachment D – Waste and Treatment Process Information	Yes	Yes	Provide additional information on the process drain tank and microfilter cleaning solutions.

Thank you for your assistance in this matter. If you need any additional information or if you have any questions regarding this notification revision, please do not hesitate to call me at (760) 791-5884.

Sincerely,



Curt Russell  
Topock Site Manager

Enclosures:

Facility ID Form with owner/operator signature  
Attachment D - Description of Waste Stream and Treatment Process  
Revised Process Flow Diagram

cc: Bob Doss, PG&E  
Yvonne Meeks, PG&E  
Chris Smith, PG&E

## **Facility Identification Form**

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CUPA

San Bernardino County Fire Department • Hazardous Materials Division
620 South 'E' Street, San Bernardino, CA 92415-0153 • (909) 386-8401 FAX (909) 386-8460

ONSITE HAZARDOUS WASTE TREATMENT NOTIFICATION - FACILITY PAGE

I. FACILITY IDENTIFICATION

FACILITY ID # 360011 BUSINESS NAME (Same as FACILITY NAME or DBA) Topock Compressor Station (Interim Measure No. 3 Groundwater Extraction and Treatment System)
FACILITY ADDRESS I-40 and Park Moabi Road (15 miles southeast of Needles, CA) CITY Needles ZIP CODE 92363

II. STATUS

NOTIFICATION STATUS 600 PERMIT STATUS (Check all that apply) 601
a. Amended b. Initial c. Renewal (PBR Only)
a. Facility Permit b. Interim Status c. Standardized Permit
d. Variance e. Consent Agreement

III. NUMBER OF UNITS AT FACILITY

(Indicate the number of units you operate in each tier, attach one unit notification page for each unit except CE-CL)

- a. Conditionally Exempt - Small Quantity Treatment (CESQT) 602
b. Conditionally Exempt - Specified Wastestream (CESW)
c. 1 Conditionally Authorized (CA)
d. Permit by Rule (PBR)
e. Conditionally Exempt - Limited (CEL)
f. Conditionally Exempt - Commercial Laundry (CE-CL) (No unit page is required for laundries)
g. TOTAL UNITS (Must equal the number of unit notification pages attached plus the number of CE-CL units) 1

IV. CERTIFICATION AND SIGNATURE

Waste Minimization I certify that I have a program in place to reduce the volume, quantity and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Tiered Permitting Certification I certify that the unit or units described in these documents meet the eligibility and operating requirements of state statutes and regulations for the indicated permitting tier, including generator and secondary containment requirements. 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 who manage the system, or those directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete.

I am aware that there are substantial penalties for submitting false information, including the possibilities of fines and imprisonment for knowing violations.

SIGNATURE OF OWNER/OPERATOR DATE 603 October 13, 2010
NAME OF OWNER/OPERATOR 604 Curt Russell, PG&E TITLE OF OWNER/OPERATOR 605 Topock Site Manager, PG&E

REQUEST FOR SHORTENED REVIEW PERIOD (CE and CA only) Yes No
State Reason for Request:

V. ATTACHMENTS (Check if attached)

ALL tiers except CE-CL (Laundries) must submit:
1. One unit specific notification page and one treatment process page per unit
2. Plot Plan (or other grid/map) Note: See Figure: Water Treatment Area Equipment Layout (As-Built Drawing GA-10-01)
PBR & CA ONLY:
1. Closure Financial Assurance (formerly DTSC Form 1232)
Self Certified (<\$10,000) Other mechanism Note: See Original Notification Submitted August 27, 2004
2. Phase I Assessment (DTSC Form 1151) Note: See Original Notification Submitted August 27, 2004
Previously submitted
3. Prior Enforcement History, if applicable Note: See Original Notification Submitted August 27, 2004
PBR ONLY:
1. Tank and container certifications, if required
2. Notification of local agency or agencies
3. Notification of property owner, if different from business owner

**Attachment D -  
Description of Waste Stream and Treatment  
Process**

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*Draft – Privileged and Confidential*

ATTACHMENT D – Revision No. 3, October 2010  
PACIFIC GAS AND ELECTRIC COMPANY  
CONDITIONAL AUTHORIZATION NOTIFICATION  
DESCRIPTION OF WASTE STREAM AND TREATMENT PROCESS

The purpose of treating extracted groundwater is to reduce the concentration of chromium to concentrations less than the hazardous waste threshold (defined in California Code of Regulations, Title 22, Division 4.5 [22CCR], Section 66162.24) of 5 milligrams/liter (mg/L) and to meet the waste discharge requirements of the Colorado River Basin Regional Water Quality Control Board. Chromium is the only constituent of concern related to hazardous waste management. The treatment system will include chemical reduction of hexavalent chromium to trivalent chromium, precipitation and settling of the resulting insoluble chromium hydroxide, microfiltration to remove any remaining suspended particulate matter, and reverse osmosis to remove dissolved salts.

The reagents used for treatment of the groundwater include ferrous chloride (for hexavalent chromium reduction), sulfuric acid or hydrochloric acid (for pH control), sodium hydroxide (for pH control to improve precipitation), an anionic polymer to facilitate particle settling, and an anti-scalant to reduce mineral buildup on reverse osmosis membrane surfaces. Reagents will be stored and handled in compliance with applicable federal, state and local requirements.

Groundwater containing hexavalent chromium will be extracted from four groundwater wells and pumped into the raw water tank at the treatment facility. Additional water will enter the raw water tank from the process drain tank. The inputs to the process drain tank are described below.

The water to be treated is pumped from the raw water tank into the pipe reactor, where ferrous chloride and sulfuric acid or hydrochloric acid will be injected. The pH setpoint will range from 6.0 to 6.8 and the ferrous chloride dose will range from 45 to 200 milligrams per liter depending on the influent hexavalent chromium concentration. The pipe reactor will convert hexavalent chromium to trivalent chromium. A chromium reduction tank reactor will complete conversion of any remaining hexavalent chromium to trivalent chromium.

The treated groundwater will then flow through three oxidation tanks in series. Air will be bubbled through these tanks to oxidize soluble ferrous iron to the very insoluble ferric form. The resulting ferric hydroxide precipitate will co-precipitate trivalent chromium hydroxide to remove it from the groundwater. Sodium hydroxide will be added to one or more of the three tanks to raise the pH of the groundwater to the range of 7.5 to approximately 10.0 standard pH units to further promote precipitation of iron and trivalent chromium.

Treated groundwater from the three tanks will flow into an inclined plate clarifier. Solids will drop to the bottom, thickening section of the clarifier, from which it will be transferred into containers which will be transported by trucks for offsite disposal. Treated wastewater



exiting the clarifier will be further treated in a microfilter. The microfilter system periodically backwashes solids which flow to the process drain tank.

The microfilter-treated effluent wastewater will next be treated in a two-stage reverse osmosis (RO) system. The RO system will filter out and concentrate soluble salts, reducing the effluent total dissolved solids (TDS) concentration from 4,200 to 11,000 milligrams per liter to the design TDS concentration of 500 to 1,000 milligrams per liter. The RO permeate will be blended with treated filtered groundwater and injected to aquifer injection wells. The purpose of blending is to match the existing water quality of the injection well field with a target value of 4,200 milligrams per liter.

The treatment system effluent injection is governed by Waste Discharge Requirements established by Board Order R7-2006-0060 issued by the Colorado River Basin Regional Water Quality Control Board.

The RO concentrate will have an estimated total dissolved solids concentration of 18,000 to 80,000 milligrams per liter. It will be conveyed from the treatment system to the MW-20 bench in a pipeline. Storage facilities will be installed at the MW-20 Bench to accommodate the RO concentrate stream. The RO concentrate will be transported by trucks to a disposal facility or directly discharged to the existing lined evaporation ponds at the PG&E Topock Compressor Station.

The process drain tank will be designed to collect various process liquids and return them to the raw water tank to ensure that all the plant water is treated prior to discharge. The primary inputs to the process drain tank include the microfilter backwash, phase separator drains, floor drains, rainwater, sample collection purge water, and spent microfilter membrane cleaning solutions. The spent microfilter cleaning solutions will include:

- acidic with a pH of 2.0 or below;
- acidic with a pH greater than 2.0; and
- basic with a pH less than 12.5.

The microfilter clean-in-place (CIP) solutions will drain into the microfilter CIP effluent holding tank (Tank T-503).

The microfilter cleaning solution with a pH of 2.0 or below will be introduced into Tank T-503 and co-mingled with basic spent microfilter cleaning solution with a pH less than 12.5 to achieve target pH for introduction into the IM3 treatment process as pH control. Therefore, this microfilter cleaning solution with a pH of 2.0 or below is considered to be a recyclable material exempt from classification as a waste under the provisions of California Health and Safety Code (CHSC) Section 25143.2(b)(2), because it is being used or reused as a safe and effective substitute for a commercial product without being reclaimed. The acidic microfilter cleaning solution effluent will be re-circulated to the head of the IM3 plant to complete a process acidification step. Alternatively, the microfilter cleaning solution effluent may be hauled off-site as a waste product to a permitted disposal facility.

The microfilter cleaning solutions with a pH above 2.0 will also be introduced to Tank T-503 and co-mingled with basic spent microfilter cleaning solution with a pH less than 12.5 in the

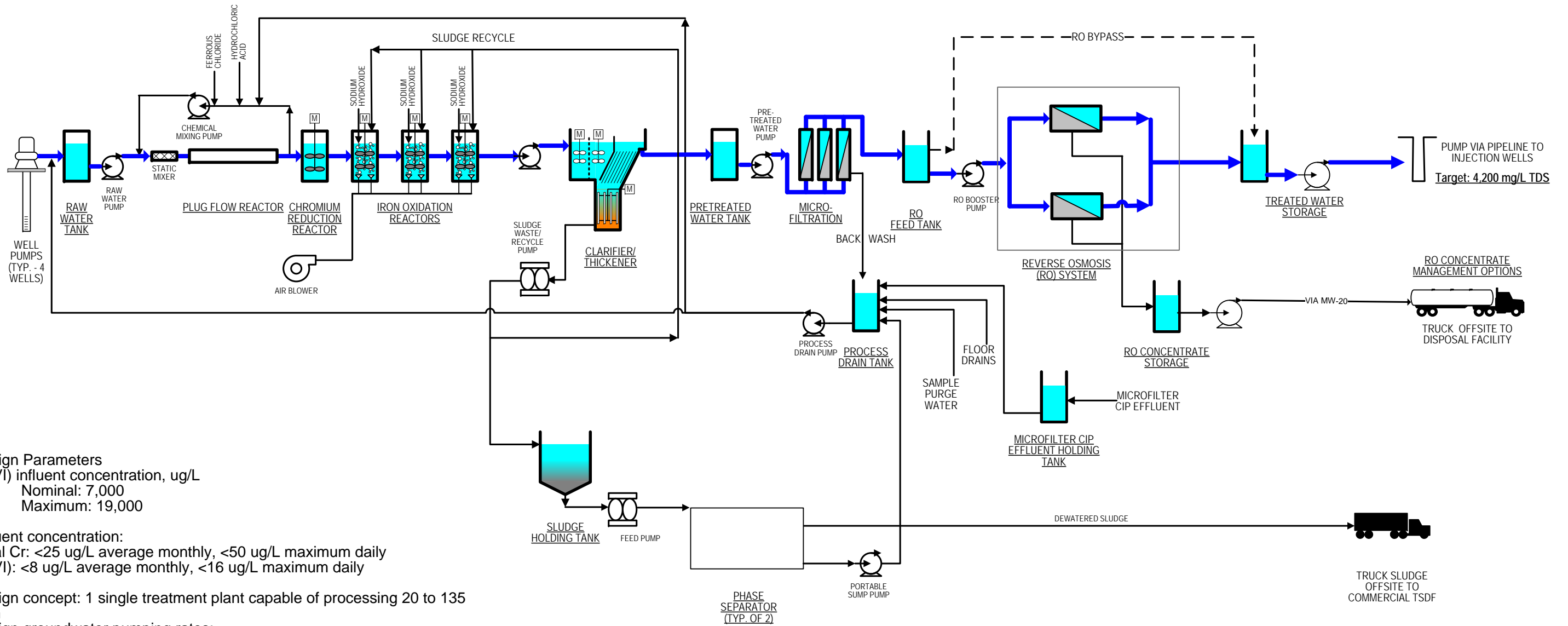
process drain tank for introduction to raw extracted groundwater. The target pH for introducing the process drain tank solution to the raw extracted groundwater is 6.0.

The following best management practices will be put in place to prevent releases of hazardous materials or untreated groundwater:

- Treatment chemicals will be brought to the site in totes or smaller containers. They will be offloaded in a paved and contained area only and stored and used in a secondarily contained area.
- The influent groundwater tank and the treatment system will be constructed on a coated concrete treatment pad with curbing to contain drips and spills. Groundwater piping influent to the treatment plant from the MW-20 Bench will have secondary containment piping with electronic leak detection.
- Hazardous materials usage will be governed by a Hazardous Materials Business Plan that specifies the location of hazardous materials onsite and includes a spill contingency and emergency response plan.
- Hazardous wastes will be managed in accordance with the requirements of Title 22, California Code of Regulations, Division 4.5.
- A treatment system operations manual will be maintained at the site. System operators will be trained regarding system operation, maintenance, and emergency procedures.
- Electronic control loops will be included in the system design to link extraction well operations with treatment system operations, regulate process flow rate within the plant and discharge of the treated water and wastes, flow-pace chemical feeds, and backwash filters.
- Level alarms/switches will be provided in tanks to prevent overflows and damage to pumps.
- The pH and key flow rates will be continuously monitored to assess plant performance. Filter effluent turbidity and periodic analytical tests will be used to monitor treatment process performance.
- Extraction well pumps and plant operations will shut down in the event of a process failure and/or mechanical damage. Alarms will be indicated on a local control panel at the treatment unit. A manual reset will be required to restart the plant.

## **Revised Process Flow Diagram**

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Design Parameters  
 Cr(VI) influent concentration, ug/L  
 Nominal: 7,000  
 Maximum: 19,000

Effluent concentration:  
 Total Cr: <25 ug/L average monthly, <50 ug/L maximum daily  
 Cr(VI): <8 ug/L average monthly, <16 ug/L maximum daily

Design concept: 1 single treatment plant capable of processing 20 to 135 gpm

Design groundwater pumping rates:  
 TW-3D: 90 to 110 gpm (primary)  
 PE-1: 30 to 40 gpm (primary)  
 TW-2S: 30 to 40 gpm (secondary)  
 TW-2D: 80 to 90 gpm (secondary)

Notes:  
 Cr - chromium  
 Cr(VI) - hexavalent chromium  
 gpm - gallons per minute  
 ug/L - micrograms per liter  
 RO - Reverse osmosis



PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE NUMBER 3	PROCESS AND INSTRUMENTATION DIAGRAM			
	PROCESS FLOW DIAGRAM			
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM	SIZE	PROJ. NO 408401	DWG NO PROCESS FLOW DIAGRAM	REV 3
	SCALE	NTS	SEPTEMBER 2010	SHEET 1 OF 1