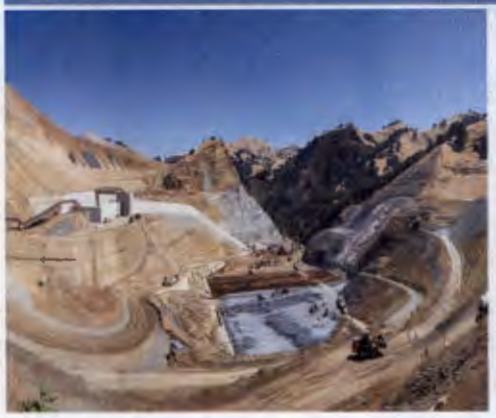
Calaveras Dam Replacement Project

HETCH HETCHY WATER SYSTEM IMPROVEMENT PROGRAM

Fact Sheet

Hetch Hetchy Regional Water System

Spring 2018 | www.sfwater.org/sunolvalley | 866-973-1476



Project Background

The San Francisco Public Utilities Commission (SFPUC), owner and operator of the Hetch Hetchy Regional Water System, is building a new dam to replace the existing Calaveras Dam. The Calaveras Reservoir, impounded by Calaveras Dam, is our system's largest drinking water reservoir in the local Bay Area. When full, it provides more than half of the system's local storage capacity for 2.6 million customers. The existing earth fill dam is 91 years old and is located within 1,500 feet of the active Calaveras Earthquake Fault. In 2001, the SFPUC lowered water levels in the reservoir to less than 40 percent of normal operating capacity in response to seismic concerns. Once completed, the reservoir will be restored to its historic storage capacity of 96,850 acre feet of water (31 billion gallons).The Calaveras Dam Replacement Project is the largest project of the $4.8 billion Water System Improvement Program (WSIP) to repair, replace, and seismically upgrade key components of the Hetch Hetchy Regional Water System.

Project Update

To date, nearly 10 million cubic yards of earth and rock materials have been moved. That is an equivalent to three Levi Stadiums full of rock and materials. Since the completion of the spillway in April 2016, our construction team has completed several key components of the dam. Crews have completed a new outlet tower, a shaft, and a new 78-inch pipeline incased in concrete to be able to take water out of the reservoir. Our construction teams have also drilled 100 feet down into the rock below the future dam and injected grout to seal up the foundation and left and right abutments.

The dam is currently at an elevation of 694 feet, which is 2/3 of its final height. During the winter and early spring months, the embankment work was stopped but worked continued on some of the dam's support facilities such as the: stream maintenance building, the downstream toe electrical building and the outlet works. The embankment work will resume in April 2018. The entire project is expected to be complete in mid-2019.

Construction Began: August 2011
Projected Completion: April 2019
Project Cost: $810M
Construction Management: Black & Veatch
Designer: AECOM / URS
Construction Contractor:
Joint Venture of Dragados USA, Flatiron West Inc. and Sukut Construction

Rendering of replacement dam

Project Details

The project consists of building a new zoned earth and rock fill dam immediately downstream of the existing dam. This work will restore the Calaveras Reservoir to its historic capacity. The reservoir provides 50% of the Hetch Hetchy Regional Water System's local Bay Area water storage. This storage is crucial to providing adequate water to our customers in times of drought and when Sierra Nevada resources are not available.

- The new dam will have a structural height of **220 feet**, a crest length of **1,210 feet**, and a width of **80 feet** at the crest and **1,180 feet** at the base
- More than **11 million cubic yards of excavation** is required to construct the new dam. This is equivalent to more than 1,550 football fields buried one yard deep. Approximately 3.5 million cubic yards will go into the construction of the new dam, including a buttress fill to stabilize an existing landslide
- The **new spillway will be 1,550 feet long** utilizing 50,000 cubic yards of concrete for the entire spillway
- Upon completion, the Calaveras Reservoir will be restored to its historic nominal storage capacity of **96,850 acre feet (31 billion gallons)**
- The new dam will allow us to **release water into Alameda Creek** in a manner that controls water temperatures and flow rates depending upon the life cycle needs of the fish. We will also install fish screens and a fish ladder at the Alameda Creek Diversion Dam to **support the restoration of Steelhead Trout** to the Alameda Creek Watershed
- A **new intake/outlet shaft tower** has been constructed, consisting of a 20-foot diameter by 163 foot deep vertical shaft and three new adit tunnels. This inlet/outlet structure will convey water to and from the reservoir through a **72-inch diameter steel lined tunnel** and a **78 inch diameter pipeline** downstream

Although 85 percent of the materials for the new dam will come from on-site borrow areas, approximately 300,000 cubic yards of sands and gravels and 150,000 cubic yards of hard rock will need to be imported to the site for construction of the internal filters and drains within the zoned embankment dam.

Construction Site Downstream of Dam

Calaveras Road Closure Update

Calaveras Road will remain closed until further notice. It will remain closed to all types of thru traffic 7 days a week, 24 hours a day between Geary Road and Oakridge Road – near the Alameda/Santa Clara County line remains in effect.

This is due to last year's storm damage along this stretch of road. Under normal conditions and the construction schedule, Calaveras Road would be open to thru traffic on weekends and holidays. However, this is no longer the case, and the road will remain closed every day to all traffic until further notice. More details online at sfwater.org/calaverasroad

To join our road advisory notification list, please send an email to

For more information

24 hour answer line (866) 973-1476

sfwater.org/sunolvalley

onunez@sfwater.org

blauppe@sfwater.org

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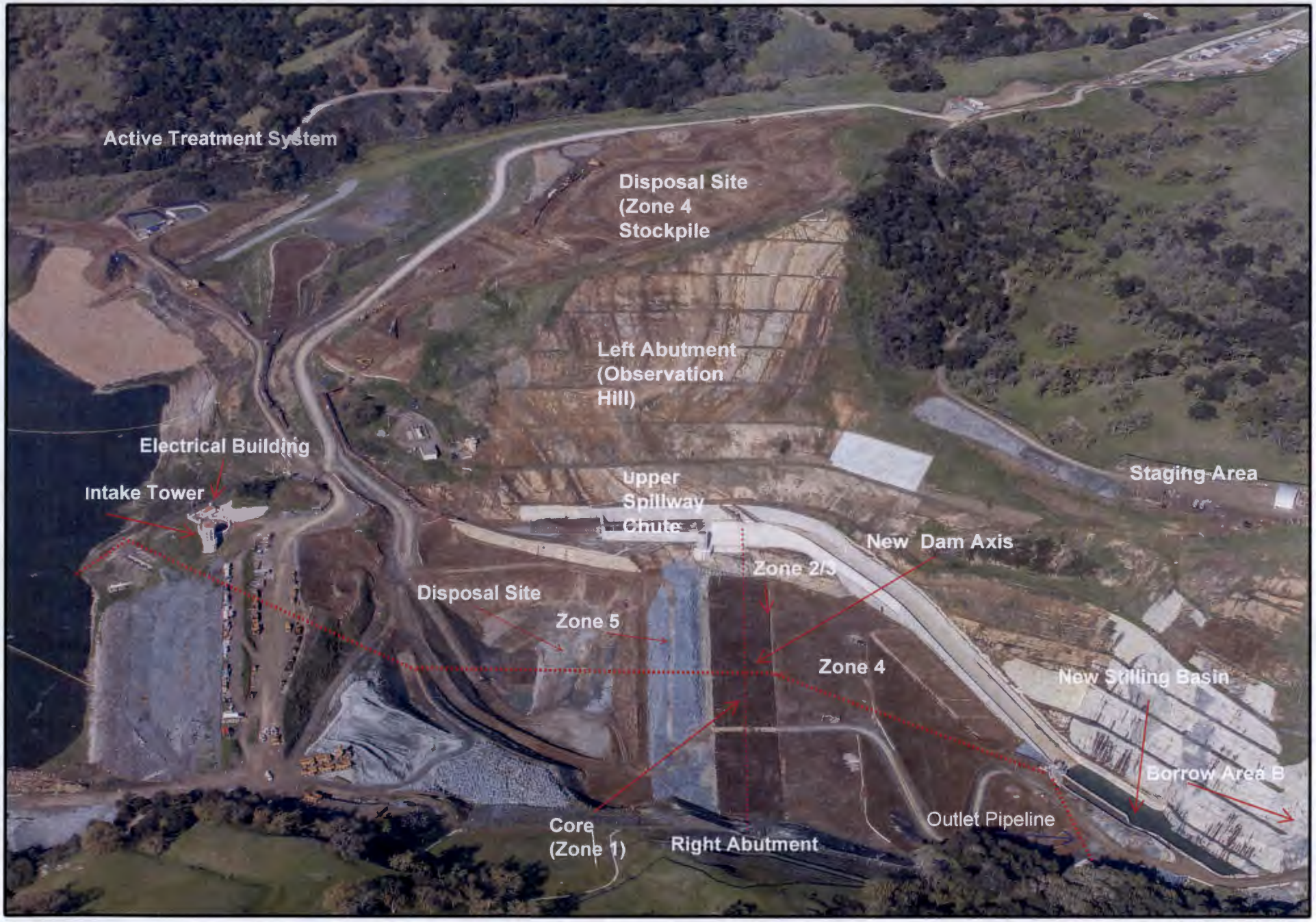


Photo Date: March 23, 2018

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

CALAVERAS DAM REPLACEMENT PROJECT
San Francisco Public Utilities Commission

skyhawk PHOTOGRAPHY

Fact Sheet

Naturally Occurring Asbestos

Project Summary

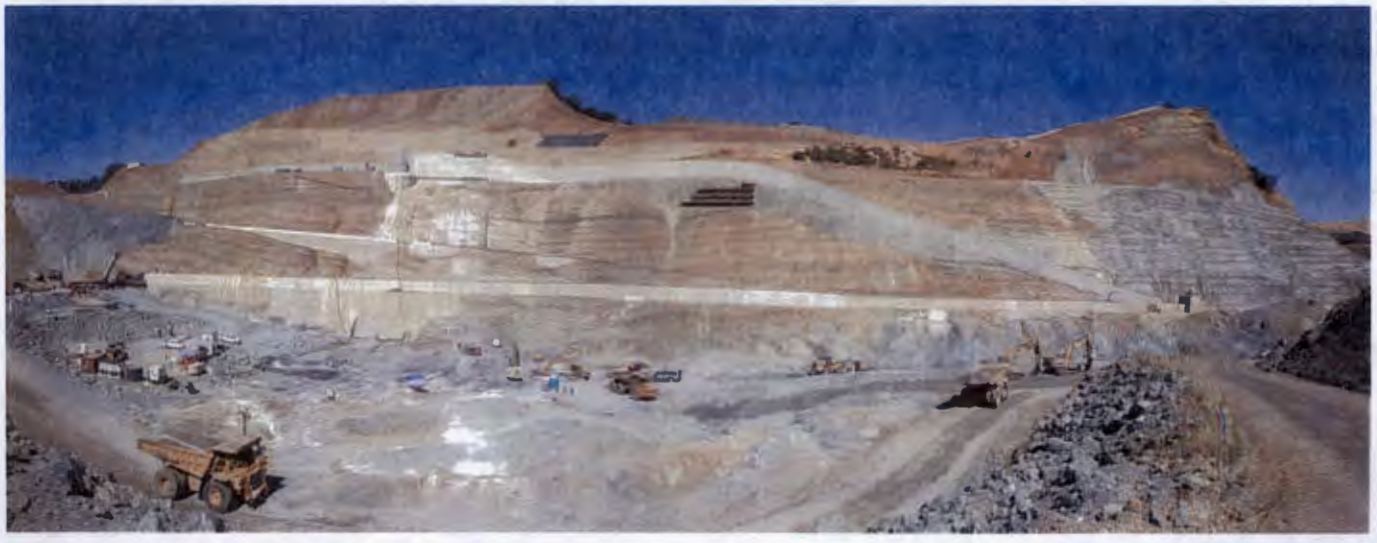
The San Francisco Public Utilities Commission is rebuilding Calaveras Dam, our largest local Bay Area drinking water reservoir. The existing earth fill dam is located near the active Calaveras earthquake fault. We lowered water levels in the reservoir in response to seismic concerns in 2001. The project consists of building a new zoned earth and rock fill dam immediately downstream of the existing dam. The replacement dam will have a structural height of 220-feet and is designed to accommodate a maximum credible earthquake on the Calaveras fault. The dam will have a crest length of 1,210 feet, a base thickness of 1,180 feet, and crest thickness of 80 feet. The total volume of the dam will be approximately 3.5 million cubic yards. The replacement dam will restore the original reservoir capacity of 96,850 acre-feet, or 31 billion gallons of water providing water to the 2.6 million customers in the Bay Area.

About Naturally Occurring Asbestos

Asbestos is the name given by the United States Geological Survey to a group of different fibrous minerals that occur naturally in the environment. Asbestos fibers are microscopic, do not dissolve in water or evaporate, and are resistant to heat, fire, and chemical or biological degradation. Because of these qualities, asbestos has historically been used in many commercial products, including insulation, brake linings, and roofing shingles.

Fibers can be released into the air when disturbed by human activities or by natural erosion. There are two types of asbestos fibers that occur naturally in rock formations: chrysotile and amphibole asbestos. Many scientists believe that amphibole asbestos fibers are more of a health concern than chrysotile.

Portions of the approximately 10 million cubic yards of material being moved in order to construct the replacement Calaveras Dam are composed of rock formations that contain varying levels of Naturally Occurring Asbestos. Geotechnical explorations in the area of the Calaveras Dam Replacement Project construction revealed that the Sunol Valley contains rock types, namely Franciscan Complex mélange that includes serpentinite, which is known to contain naturally occurring chrysotile asbestos. Serpentinite is the state rock of California and occurs naturally. It is common in the Sierra foothills, the Klamath Mountains, and the Coast Ranges, and found in at least 44 of California's 58 counties. Rock formations in the vicinity of the Calaveras Project site contain both chrysotile, and amphibole asbestos.



General Risks from Naturally Occurring Asbestos

Most studies regarding the risks of asbestos involve workers who were exposed to high levels of asbestos in occupational settings over long periods of time. Our understanding of risks related to exposure to Naturally Occurring Asbestos (NOA) is relatively limited. However, due to the prevalence of asbestos occurring naturally in northern California, there is the possibility that some undetermined but low level risk is always present from background concentrations of airborne Naturally Occurring Asbestos. In addition to variation in individual susceptibilities found with all such exposures, there are several factors that contribute to a person's risk of contracting an asbestos-related disease, including: 1) higher levels of asbestos fibers in the air, 2) the mineral type of fibers and the size of the fibers, 3) higher frequency of exposure, 4) longer duration of exposure, and 5) the time that elapses after the start of exposure. Asbestos fibers may remain in the lungs for a lifetime without causing health-related issues, but in some cases, asbestos fibers can damage the lungs and cause asbestos-related disease, such as asbestosis, mesothelioma, or lung cancer. These diseases do not commonly appear for 20 or more years after the start of exposure. There also are other health considerations which exacerbate the risks associated with asbestos exposure, such as smoking.

What are the health risks from the Calaveras Dam Replacement Project?
Although dust potentially containing asbestos fibers may be generated during the project, the dust mitigation measures and work management practices incorporated into project plans will keep generation of any such dust to a minimum. Moreover, the air quality monitoring program integrated with the dust control measures, will assure that asbestos-containing dust does not leave the site at concentrations sufficient to pose unacceptable risks to workers or the public.

Human disease from asbestos is most often associated with cumulative, long-term inhalation exposure to airborne asbestos and the risk of disease increases with increasing exposure concentration and exposure duration as well as time that elapses since first exposure.

We have established conservative risk-based thresholds at perimeter monitoring stations. As long as such thresholds are not exceeded on average over the six years of the project, then individuals in the area surrounding the CDRP who become exposed will experience no more than a 1 in 100,000 added risk for cancer from their exposure. Moreover, due to the assumptions built into these calculations, any actual risks will likely be even lower.

Are people in nearby houses, park districts, or communities at risk?
Federal, State, and local agencies have been grappling with this very question. At this time there is no clear answer. What complicates the issue is that asbestos is everywhere in our communities and in our environment. Serpentinite and other asbestos-containing rock formations are located throughout California, including particularly the Bay Area. These formations may also be disturbed by a broad range of activities being conducted throughout the area. It is important to note that Naturally Occurring Asbestos does not pose a health risk until it becomes airborne, and the program is designed to prevent this from occurring.

Find additional information about Naturally Occurring Asbestos Here:
U.S. Environmental Protection Agency
http://www.epa.gov/asbestos/pubs/clean.html

California Environmental Protection Agency Air Resources Board
http://www.arb.ca.gov/toxics/asbestos/asbestos.htm

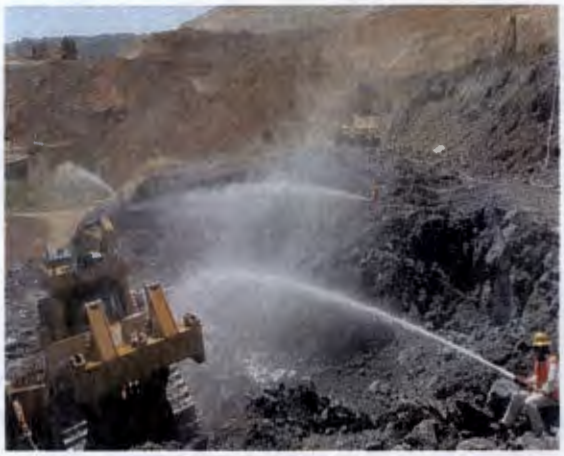
California Geological Survey
http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos

Prevention of Asbestos Exposure

The SFPUC has implemented an extensive dust control and monitoring program that is designed to keep dust generation to a minimum while assuring that asbestos-containing dust does not leave the site at levels sufficient to pose unacceptable risks to individuals who may work, recreate, or reside in the vicinity of the site.

Comprehensive Dust Control

An important tool at our disposal is dust control. Naturally Occurring Asbestos (NOA) fibers are a component of dust that is generated from NOA containing areas during construction. Therefore, by carefully controlling dust emissions, we minimize NOA leaving the site as well. Real time dust monitors on site provide an important tool for construction managers to continuously monitor the efficacy of our dust control measures. Areas with NOA and haul roads are kept wet during excavation, and vehicles leaving the site are washed to prevent trackout of NOA.



We closely monitor air quality around the project site to ensure we are protecting the public and our workers at all times. The SFPUC and a team of air quality experts are working in coordination with regulatory agencies regarding the dust control program, including: San Francisco Planning and Health Departments, State of California Regional Water Quality Control Board, Bay Area Air Quality Management District (BAAQMD), and the California Occupational Safety and Health Administration (Cal/OSHA).

Background Air Monitoring

In order to establish the natural, background air quality in the area prior to construction, the SFPUC collected air quality samples from 14 stations for two and a half years, and again for three months just prior to project startup. The results of these background data show that airborne asbestos was detected intermittently at all monitoring stations. Levels ranged from non-detectable to .0164 structures per cubic centimeter. These results indicate that the levels detected are typical of background levels of asbestos found near serpentine rock formations. These levels indicated the low level presence of airborne asbestos fibers prior to any construction activity on the project.

Trigger Levels for Construction Monitoring

We have established a system for monitoring air quality at different distances from the work activities. This begins with samples collected in worker breathing zones and moving outward to samples collected in each construction area, at the perimeter of the project site, and at locations throughout the Sunol Valley (ambient stations). The perimeter locations are designed as "sentinel" stations sited to detect any potentially unacceptable concentrations of fugitive NOA from the project.

We have been working with industry experts to establish trigger levels for perimeter stations. Should levels of naturally occurring asbestos detected at these perimeter air monitoring stations exceed these trigger levels, we will modify our construction activities. We are required to implement enhanced dust control measures, including if necessary, slowing down or stopping construction activities.

The trigger levels are designed to be conservative and consistent with regulatory guidelines. As long as such thresholds are not exceeded on average over the six years of the project, than individuals in the area surrounding the CDRP who become exposed will experience no more than a 1 in 100,000 added risk for cancer from their exposure which is consistent with EPA guidance. Moreover, due to the multiple, conservative assumptions built into these calculations, any actual risks will likely be even lower.

Weather and wind monitoring

We have installed meteorological monitoring stations at all perimeter and ambient monitoring stations to provide continuous data including wind speed and direction. These data allow the SFPUC to assess local weather conditions, including wind patterns and determine how best to proceed with construction activities in a manner that minimizes potential dust generation

Air Quality Sampling

About Sampling

Air quality monitors have been strategically placed in and around the interior, perimeter, and outlying areas in and surrounding the project site. These locations are designed to detect fugitive fibers at concentrations potentially capable of posing unacceptable risks.

Using a pump with a controlled flow rate, fibers are collected on a filter that is especially designed for asbestos. The filters are then taken to an offsite independent certified laboratory where a microscopist examines the filters with an electron microscope to count the amount of fibers present in the air quality sample. The results must then be reviewed again for quality control and assurance purposes. The results are reviewed daily, and included into the project emission budget that has been established for the project.

Samples are examined using transmission electron microscopy (TEM). Electron microscopes offer a high level of magnification and sensitivity. Unlike Phase Contrast Light Microscopes, TEM allows the analyst to distinguish between asbestos and non-asbestos fibers and even to distinguish between types of asbestos. These detected concentrations are generally reported as asbestos structures per cubic centimeter of air collected (s/cc).

Results of Air Quality Sampling

We post results from our regular air quality testing on a weekly basis on our website at: www.sfwater.org/sunolvalley.
Click on "Air Monitoring Results" on right side bar.

For more information on the Calaveras Dam Replacement Project or the Naturally Occurring Asbestos Air Monitoring Program

Contact us:
24 hour-Answer Line 866-973-1476

Email us:
onunez@sfwater.org
blauppe@sfwater.org

Follow us online at:
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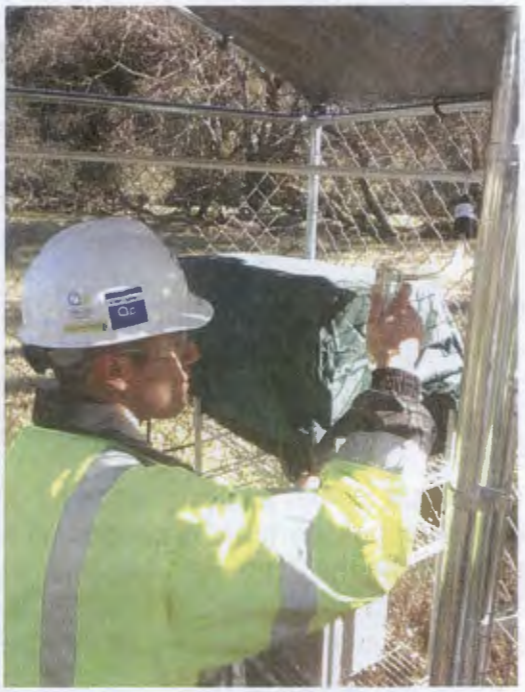

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ENVIRONMENTAL AWARENESS TRAINING
Calaveras Dam Replacement Project

This Environmental Awareness Training brochure was prepared as a general overview of the environmental requirements for construction personnel. It is intended neither as a complete list of environmental requirements, nor as a substitute for Contract Documents or permits.

General Environmental Requirements

- All project personnel must attend Environmental Awareness Training prior to beginning work on the project site.
- Only work in designated project work areas and access roads.
- Do not enter restricted areas that contain sensitive or protected resources; observe all flagging, fencing, and field signs.
- Limit speeds to 15 mph on unpaved roads and staging/parking areas. Observe the posted speed limit on the West haul road.
- Do not litter with food or waste. Place all trash in containers with lids or covers to avoid attracting wildlife.
- Pets and firearms are not allowed on the project.
- Be courteous to recreational users and the general public. Direct questions to the designated public information liaison.

Hazardous Materials Management

- Maintain emergency spill response supplies on-site.
- Clean-up and contain all leaks and spills immediately, if safe to do so, and dispose of materials properly. Immediately report spills to your supervisor and the Environmental Inspector (EI).
- Inspect vehicles/equipment daily at start-up for leaks and repair immediately.
- Conduct all refueling and vehicle/equipment servicing in designated areas at least 100 ft. from wetlands, creeks, or drainage swales.
- Place a drip pan or absorbent material under vehicle/equipment until leaks are repaired and during refueling/servicing.
- Store hazardous materials and other wastes at least 100 ft. from wetlands, creeks, and drainage swales unless otherwise approved by the EI and allowed by California Department of Fish and Game.
- Store hazardous materials in a designated storage area in a watertight labeled container with secondary containment or enclosed storage shed.
- Use designated concrete washout areas. Contain concrete and other washout areas to avoid discharge of pollutants to soil or watercourses.

Air Quality and Dust Control

- Limit idling of diesel-fueled equipment/vehicles to no more than 5 minutes.
- Water all exposed surfaces (e.g., unpaved access roads, parking/staging areas, etc.) at least 2 times daily or apply nontoxic soil stabilizers. At Disposal Site 7, water 3 times daily or apply nontoxic soil stabilizers.
- Use water sweepers daily and prior to any rain event to clean all paved access roads and parking/staging areas in the project site and to clean track-out on public streets.
- Cover, water (at least 2 times daily or more as necessary to control dust), or apply nontoxic soil stabilizer to active stockpiles.
- Stabilize inactive spoil piles (i.e., 14 days or greater) with hydroseed, erosion control fabric, crimped straw, or other biodegradable material.
- Cover all trucks hauling soil, demolition waste and other loose materials prior to leaving the project site.
- Maintain spoils hauling trucks so that no spillage can occur from holes or other openings in cargo compartments.

Storm Water Control

- Best Management Practices (BMPs) are required year-round.
- Preserve existing vegetation whenever possible during grading and excavation..
- Install erosion control BMPs (runoff control and soil stabilization) along with sediment control BMPs for active construction areas.
- Notify your supervisor of missing, ineffective, or damaged BMPs to for installation, redesign, or maintenance/repairs.
- Locate portable toilets a minimum of 50 ft. from all creeks, ponds, and reservoirs.
- Locate stockpiles at least 50 ft. from creeks and drainage swales. Install fiber rolls or silt fence at base of stockpile upslope of creek/drainage swale.
- Install linear sediment controls (e.g., fiber rolls) along the toe, face, and at the grade breaks of exposed slopes.
- Use silt fences or silt curtains when fill placement or excavation is adjacent to or in Calaveras Reservoir.
- Provide effective soil cover for inactive (i.e., 10 days or greater) areas and all finished slopes and open space.

Paleontological and Cultural Resources

Paleontological resources are the fossilized remains of prehistoric organisms. Penalties can occur for intentionally disturbing or collecting fossils.

- Prior to starting any new grading, excavation or drilling work, check with your supervisor to determine if monitoring is required.
- Ensure that the Paleontological Monitor is on-site in high sensitivity areas requiring monitoring during ground disturbing activities.

Cultural resources are protected by state and federal laws and penalties can occur for intentionally disturbing or collecting them. Cultural resources may include concentrations of shellfish remains, bones, evidence of fire, artifacts (e.g., shell beads, arrowheads, stone mortars), structural remains, bottles, hardware, broken dishes, trash pits or privies as well as human remains.

Paleontological Monitors and Archaeological Monitors have the authority to halt work if there is a potential discovery.
In the event of discovery of cultural or paleontological resources, implement the following discovery procedures:

- Halt work within 50 ft. of the discovery.
- Do not handle, collect, or damage the resource.
- Notify your supervisor and the EI immediately.
- Install fencing or staking to prevent vehicles/equipment or personnel from entering the area.

Resume construction only after the EI has given authorization.

Weed Control and Vegetation Protection

- Bring construction equipment to the site clean and free of soil, seed, and plant parts.
- Imported fill material and soil amendments shall be free of vegetation and plant material.
- Erosion control materials (e.g., straw, fiber rolls) shall be certified weed free by the County Agricultural Commissioner.
- Install protective measures (e.g., geotextile cushions, timber mats, etc.) to protect soil and vegetation in wetlands and aquatic habitats.
- Avoid injury or damage to trees, shrubs and grasses outside project work limits.

Wildlife Protection

- Do not feed, handle or disturb **any** wildlife. Handling of protected species can result in fines. If you encounter wildlife, leave it alone and back away slowly. Notify your supervisor and the EI.
- Immediately report any injured, dead, or trapped wildlife to your supervisor and the EI.
- Notify your supervisor and the EI prior to any work in areas with undisturbed vegetation.
- Cover trenches or excavations deeper than 2 feet left open overnight with plywood or other hard material or provide escape ramps (earth fill or wooden planks).
- Maintain wildlife exclusion fencing. Report any damaged fencing to your supervisor for immediate repair.
- EIs and Biological Monitors have the authority to halt work if protected wildlife is observed.
- Ensure that trenches, under construction vehicles/equipment, materials/supplies, storage areas or other suitable locations for California tiger salamander and Alameda whipsnake to hide are inspected by the Biological Monitor prior to filling the trench or moving the vehicle/equipment/materials.

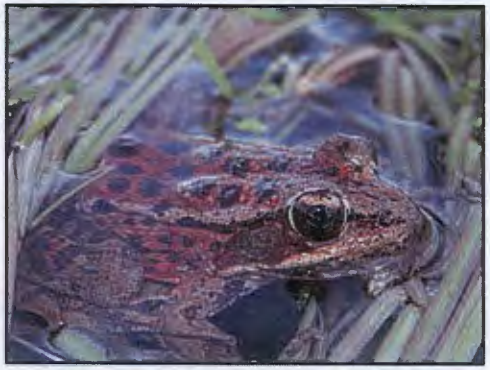
California tiger salamander (*Ambystoma californiense*)

Status
Federal: Threatened
State: Threatened

Description
A large, stocky, terrestrial salamander up to 8 inches long. Back and sides are black with white or pale-yellow spots or bars.

Habitat
Found in grasslands and foothill regions. Prefers natural pools or stock ponds. During the dry months may be found in ground squirrel or other burrows where they enter a dormant state called *aestivation*.

California red-legged frog (*Rana draytonii*)



Status
Federal: Threatened
State: Species of Special Concern

Description
May reach a body length of 5 ¼ inches. Skin coloration can vary widely (reddish-brown to gray), with dark specks and blotches.

Habitat
Adult frogs require still or slow-moving water that is relatively deep, with shrubby or emergent riparian vegetation. Generally found near small ponds, quiet pools along streams, reservoirs, springs, and marshes. Inhabits small mammal burrows.

Callippee silverspot butterfly (Speyeria callippe callippe)

Status
Federal: Endangered
State: None

Description
Medium sized butterfly with wingspan of approx 2.2 inches. Upper wings are brown with extensive black spots and lines, and extremely dark basal area.

Habitat
Found in native grassland and adjacent habitats. Females lay their eggs on the dry remains of the larval food plant, Johnny-jump-up (*Viola pedunculata*), or on the surrounding plant debris.

Alameda whipsnake (*Masticophis lateralis euryxanthus*)

Status
Federal: Threatened
State: Threatened

Description
A slender, fast-moving snake 3 to 4 feet in length with a slender neck, broad head and large eyes. Back is colored sooty black with a distinct yellow-orange stripe down each side.

Habitat
An active daytime predator, adult snakes peak in surface activity during the spring mating season with a smaller peak during late summer and early fall. Rock outcrops are important for retreat opportunities. Generally retreats in November into a small mammal burrow or other shelter, and emerges in March.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)

Status
Federal: None
State: Species of Special Concern

Description
Body is around 7 inches long with a long furred tail. The rat has black protruding eyes and soft and smooth grayish-brown fur.

Habitat
Inhabits forested areas. Constructs large nests, called middens with woody debris, grass, leaves, and other materials.