

# ALMADEN DAM PROGRAM

## JUNE 11, 2003 PUBLIC SCOPING MEETING QUESTIONS

### ENGINEERING:

1. Is Almaden Reservoir used for flood control? How does the loss of the reservoir capacity affect the flood control aspect of the facility?

Almaden Reservoir was not designed for flood control, but it is operated according to a rule curve in an attempt to keep the reservoir down during the California storm season. As such it offers some very minimal flood control benefits, but both the reservoir itself and its outlet pipe (only 3 feet in diameter) are too small to provide any significant flood control benefits to areas downstream. In any large storm event, the drawn down reservoir fills quickly, and then any new inflow passes through the reservoir and over the spillway.

2. Is there a way to provide water in the downstream creek when the reservoir is empty during construction?

The District has identified a preferred solution that maintains a wet stream by (a) collecting the natural flow into the reservoir and releasing it downstream, (b) supplementing this water (if necessary) by releasing treated water to the creek just downstream from the dam using the existing San Jose Water Company 8-inch line for supply, and (c) making additional supplementary release to the creek (if necessary) at McKean Road from the District's raw water pipeline.

3. How does the District intend to bypass the dam and provide water to the downstream creeks during construction?

The Contractor would build a small cofferdam to intercept the inflow and collect it in a pipe. The Contractor would then likely connect this pipe to the existing 36-inch diameter pipe that runs under the dam.

4. Is there a plan to return the Alamos Creek to its natural flow with the removal of Almaden Dam?

At this time there are no plans in place for dam removal. Over the next 10-15 years, the District will be investigating a variety of options for extending cold-water fisheries (trout and salmon) habitat in Alamos Creek. Among the alternatives that will be studied is the removal of the dam. Whether this alternative will prove feasible is unknown at this time as well as whether other options would prove more beneficial.

5. Will emptying the reservoir affect the integrity of the dam?

No, the reservoir used to be dewatered on a yearly basis. There is a precaution in that rapid drawdown can lead to localized slope instability. The slopes will be monitored during dewatering to ensure that any damage to the dam face is repaired before the dam is refilled.

6. Are there any plans to remove the sediment in the reservoir?

Sediment removal was one of the options considered. It was not selected as the preferred alternative for two reasons. One, it is much more expensive to remove and dispose of the sediment compared to other alternatives. Two, it is suspected that some of the sediment contains mercury from the previous mining operation. It is presently fairly well contained below later layers of sediment, but disturbance would result in new exposure and would require disposal at a hazardous waste site at great expense.

7. What is the duration of the anticipated construction for the Outlet Works Element of the Almaden Dam Program? Are there any contingency plans for possible delay in construction?

The plan is to bid the project over the winter to allow the Contractor to pre-purchase any equipment and be ready to start work as soon as the reservoir can be drawn down in the spring. The reservoir would be drawn down in April and May, giving the Contractor access to the site from late May or early June until winter rains return in late October or November. In an exceptionally wet year, when it is not possible to draw down the reservoir by early June, it may be necessary for the District to delay construction for a year. Once construction starts, the Contractor will be responsible for establishing a temporary working outlet in the event of a summer storm. In a worst-case scenario, it may be necessary to use this temporary outlet over the winter and return the following year to complete construction of the new permanent outlet.

8. Have inspections of the existing outlet pipe been performed? If so, what are the conclusions of the inspections?

As part of the preliminary engineering, Underwater Resources of San Francisco inspected the condition of the 36-inch outlet pipe in October, 2001. Inspection consisted of a visual inspection of the condition of the pipe and lining, a check of whether the pipe was out-of-round, and a check of pipe thickness at regular intervals using an ultrasonic meter. The District's engineering consultant, URS, checked the loading conditions on the pipe. It was concluded that the outlet pipe itself was adequately designed, was installed properly, and that its current condition is good, with no signs of excessive wear or corrosion. It was further concluded that the estimated remaining service life was in excess of thirty years.

The connection of the outlet pipe to the outlet tower does leak. It is speculated that this is a result of movement of the tower during the Loma Prieta earthquake in 1989. Also, portions of pipe at the downstream end of the dam (the tee to the Almaden-Calero Canal and downstream of the butterfly control valves) are badly corroded and need to be replaced.

9. What studies have been or are being performed on the Almaden-Calero canal? Is there a plan to perform work on the canal?

The District is currently in the planning phase of the Almaden-Calero Canal Rehabilitation Project. The deliverables for the planning phase of this project are a

Project Plan, Planning Study consisting of a technical memorandum/Engineer's Report and environmental document, and acquisition of environmental permits.

The preliminary scope of work is to repair or improve the sections of the canal that have been identified as the area with problems stemming from seepage and overflow as well as improving maintenance access to the canal.

10. What affect to the turbidity of the water will this project have during and after construction?

The environmental permits issued by the resource agencies will require the Contractor to meet certain turbidity requirements regarding water intercepted and released downstream during construction. Both the responsible agency and the District will monitor this during construction. Releases from the reservoir after construction of the new intake will reflect turbidity within the reservoir. (There will be no special effort to settle out suspended solids, nor will there be an effort to scour sediment from the bottom of the reservoir and pass it downstream.)

11. Are there any plans to fix the one-lane section of Alamitos Road? Have anyone been held responsible for the dumping of gravels into the creeks during the previous attempts to repair the road?

The District is currently in the process of contacting the County of Santa Clara regarding this issue. Further information will be provided as it becomes available.

### **Dam Seepage and Instrumentation**

12. Is it normal for dams to experience seepage?

Yes, however a variety of design measures are employed to minimize and monitor the seepage through earth dams. Depending on the location, quantity and turbidity, special monitoring and/or remedial measures may be employed.

13. What is the objective of the seepage element of the Almaden Dam Program?

At Almaden Dam, the seepage on the left abutment has been present since after construction, but was never considered serious, nor a threat to the safety of the dam. The District and the Division of Safety of Dams (DSOD) have always monitored the seepage as part of routine inspections to look for undesirable changes. In recent years, the seepage collection and monitoring system has come into disrepair due to age. The current project will replace the existing aged collection system.

14. Are there seismic monitoring instruments present at the dam? Is there a plan to install additional instruments?

There are no accelerometers at the site at this time, however, the dam does have piezometers and a seepage weir, which are monitored regularly, and more frequently after earthquakes, to help detect earthquake-induced changes.

The District is committed to a new Dam Instrumentation program (DIP) at ten of the District's earth dams including Almaden. Design is still in the conceptual stage, and implementation is planned for about two to five years from now. The conceptual plan may include an accelerometer at the Almaden site. The plan includes new piezometers and an inclinometer which will record, respectively, seepage pressures and deflections in the dam. As discussed, as part of this project, the District will be installing a new seepage collection and monitoring system. These new instruments will be able to detect earthquake-induced changes.

## ENVIRONMENTAL:

15. Have the District taken into consideration the wildlife near the Almaden Dam that may be impacted by the project?

Impacts to plant and animal life will be evaluated in the Draft Environmental Impact Report (EIR). Efforts to minimize the degree of impact in the downstream portion of Alamos Creek below the dam have been built into the preferred alternative. The EIR will identify potential impacts at both the dam and reservoir and will identify necessary measures to mitigate these impacts to a less-than-significant level. Since the program is designed to maintain Almaden Dam and Reservoir, most of the impacts expected to result from program implementation would stem from the construction phase of the Outlet Works and Dam Seepage Elements.

16. Has the District been in contact with the Department of Fish and Game regarding the project?

Yes, the California Department of Fish and Game has been involved in initial consultation regarding the program. The agency participated in a visit to the site just a few days after the public scoping meeting on June 11<sup>th</sup>. It is anticipated that the agency will be providing direct written comment on the NOP. The District will be required to apply for a 1600 Permit from CDFG. The permit will stipulate the resource management obligations to be associated with the proposed program. Various conditions will be identified in the permit language with which the project actions will need to comply including such activities as pre-project resource surveys, construction Best Management Practices, and post-project follow-up.

17. What types of fish are there in Almaden Reservoir and Alamos Creek?

Although comprehensive surveys of fish occurrence and abundance are not regularly conducted at this time, Alamos Creek, for the most part has a native assemblage of fish species with some exotic species persisting in the reservoir. Species we have recorded in the recent past include:

Steelhead/rainbow trout	<i>Oncorhynchus mykiss</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>
Sacramento sucker	<i>Catostomas occidentalis</i>
Prickly sculpin	<i>Cottus asper</i>
California roach	<i>Lavinia symmetricus</i>

Hitch	<i>Lavinia exilicauda</i>
Pacific lamprey	<i>Lampetra tridentate</i>

The reservoir species include:

Rainbow trout	<i>Oncorhynchus mykiss</i>
Prickly sculpin	<i>Cottus asper</i>
Sacramento sucker	<i>Catostomas occidentalis</i>
Largemouth bass	<i>Micropterus salmoides</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Black crappie	<i>Pomoxis nigromaculatus</i>

There may be other fish species as well.

18. What are the migratory patterns of the fish in the reservoir and in the downstream and upstream creeks?

There is no data available on the specific fish movement patterns in the reservoir. Most of the species listed above are “resident” type fish, not known for long-range movements. In other similar systems, it has been observed that trout may regularly move between the reservoir and the stream adopting an “adfluvial” life-history pattern where the reservoir seems to function in part as an “ocean” for the migratory resident trout. The normal operation of the reservoir produces a drawdown during the course of the summer for water supply operations. By late summer, reservoir conditions may become sub-optimal for the trout. It would not be unexpected if trout retreated to the more suitable stream conditions upstream under those circumstances. Some Sacramento suckers may move upstream a short distance in early spring, to suitable spawning areas from their regular reservoir positions. Thus, we expect some faunal exchange is occurring between the reservoir fishes and the native stream fishes, particularly upstream. The exotic species such as the bass, pumpkinseed and crappie typically are not found in faster moving stream waters. The downstream reaches of Alamitos Creek may occasionally receive reservoir fish in high water years when the reservoir spills. Alamitos Creek, downstream of the reservoir is also within the migratory range of steelhead (the anadromous form of rainbow trout), Chinook salmon and Pacific lamprey. The other species may be found in the stream as well but the exotic species tend to persist better in reaches where there are larger, slow moving glides or longer deeper pools. Those types of habitat conditions are not common to Alamitos Creek.

19. What will be done to the fish in the reservoir when it is drained during construction?

Due to the expressed desire of the Department of Fish and Game to prevent migration of non-native reservoir fish species into Alamitos Creek, it is anticipated that these fish will be removed (manually if necessary) from the reservoir as it is drained. The preferred option(s) for accomplishing this task will be identified in the EIR. Fish removed from the reservoir will either be relocated to other area reservoirs with similar fish populations and restrictions or disposed of.

20. What impacts to the quality of the air in terms of odor does the decaying fish in the reservoir (when drained) have?

Impacts to air quality from decaying fish in the reservoir will vary depending on the conditions. Efforts will be made to minimize potential offensive odors. These measures will be identified as a management plan for fish in the reservoir is developed during the planning process. It is anticipated that reservoir fish will either pass through the outlet and be intercepted in the creek below the dam or will be manually removed from the reservoir at the completion of the draining process. In either case, fish decay is not expected to be a significant concern. However, the EIR will evaluate this issue and propose a method of avoiding any adverse impact.

### **Mercury:**

21. What is the level of mercury in the water? Is it safe to use mercury contaminated water for ground water recharge?

Water sampling is currently underway to determine the concentration of mercury in the water in the reservoir. No current data are available for Almaden Reservoir. The maximum concentration of mercury that is allowed in drinking water is 1 mg/L. Most water samples collected in the watershed contain mercury at concentrations thousands of times lower than that, ranging around 0.000010 to 0.000050 mg/L.

Mercury has a high affinity for soil. That is, it will adsorb to soil rather than staying dissolved in water. This filtration effect of soil makes it safe to recharge groundwater, especially since the water needs to seep through hundreds of feet of soil before it reaches any wells.

22. What is the mercury level in the fish? Have there been any recent tests on the fish to determine the level of mercury in them?

The most recent fish sampling to test for mercury occurred in 1986 and was conducted by the State Water Resources Control Board. No fish sampling was conducted in Almaden Reservoir, but fish collected from Alamos Creek downstream of Almaden Reservoir and fish collected from Guadalupe Reservoir had mercury concentrations above the 1 mg/kg Food and Drug Administration action level. It is assumed that the fish in Almaden Reservoir have similar concentrations of mercury.

23. Have there been tests on the sediment to determine the level of mercury in them?

Sampling of Almaden Reservoir sediments has been conducted only a few times. The most recent sampling was conducted in 1999 by the District from a 10-foot core of the bottom sediments. Concentrations of mercury in these samples ranged from 0.8 to 9 mg/kg. Comparative background concentrations are estimated to be 0.4 to 1 mg/kg, so the sediments are somewhat higher than background, but not alarmingly so. Additional sampling will be conducted by the District prior to construction to ensure proper handling of excavated sediment.