Dam Statistics

General
- Dam type .....Earthfill
- Watercourse..... Blue Ravine
- Reservoir .....Folsom Lake
- Construction Date 1956

Dimensions
- Crest Elevation:..... 480.0 ft
- Structural Height:..... 110.0 ft
- Crest Length: .....4,820.0 ft

Hydrology
- Drainage Area: .....1,875 sq mi

RECLAMATION

END OF PRESENTATION

PLEASE VISIT OTHER
STATIONS FOR FURTHER
PROJECT INFORMATION

RECLAMATION

RECLAMATION

Managing Water in the West

Safety of Dams Project

Mormon Island Auxiliary Dam (MIAD)

NATURAL RESOURCES

Scoping Meetings -
December 2 and 4, 2008

U.S. Department of the Interior
Bureau of Reclamation

Natural Resources: Legal Context

Some of the laws that address natural resources:

- National Environmental Policy Act (NEPA)
- Endangered Species Act (ESA)
- Migratory Bird Act / Bald and Golden Eagle Protection Act
- Clean Water Act (CWA)
- Clean Air Act
- National Historic Preservation Act (NHPA)

RECLAMATION

Natural Resources: NEPA

- Completed by Reclamation prior to committing Federal resources to a project
- Requires the Federal agency to analyze potential impacts to the 'human environment' caused by those actions
- Primarily a disclosure law

Project Website:
http://www.usbr.gov/mp/jfp/index.html

RECLAMATION

Timeline of NEPA Milestones

RECLAMATION

Opportunities for Public Involvement

- Attend public meetings
- Join the mailing list
- Visit project website

Ranger Laura Trover with Campers on Bikes

- Submit comments on what should be included in the MIAD EIS/EIR

RECLAMATION

Natural Resources: Endangered Species Act (ESA)

States that all Federal agencies shall ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an ESA listed species.....

Illegal to Take, Harm, or Harass an Endangered Species

RECLAMATION

Natural Resources: Endangered Species

One potentially occurring endangered species is Valley Elderberry Longhorn Beetle (VELB)

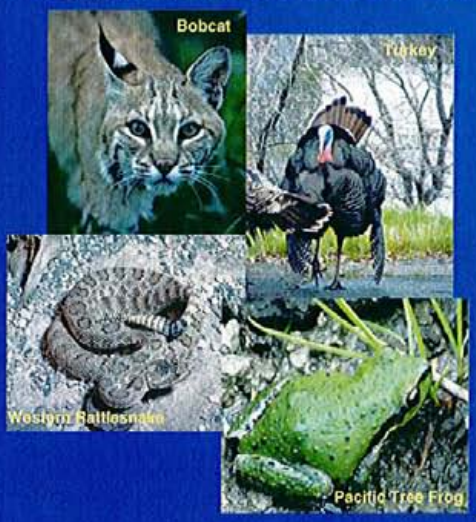
RECLAMATION

Natural Resources: Endangered Species

Another potentially occurring habitat for endangered species are Vernal Pools. These wetlands form in regions where specialized soil and climatic conditions exist. Many of the species associated with vernal pools are endangered.

RECLAMATION

Natural Resources: Other Wildlife



A variety of wildlife utilizes the MIAD area including these amphibians, birds, mammals, and reptiles.

RECLAMATION

Natural Resources: Native Vegetation

Mature Grey Pine/ Oak Woodland occurs near MIAD. A mature oak is at least 20 years old.

RECLAMATION

Natural Resources: Wetlands

- Wetlands are areas where water covers or is near the surface of the soil throughout the entire year or for varying periods of time during the year.
- Wetlands are often characterized by a large diversity of vegetation and terrestrial and aquatic animals and insects.

RECLAMATION

Natural Resources: Other Nearby Habitats

Folsom Reservoir
Large reservoir home to numerous species of fish

Lower American River
River system that serves as prime spawning and wild fish habitat

RECLAMATION

Natural Resources: Ground Water

The construction site at MIAD has a high ground-water table. Depending on the alternative chosen, an extensive dewatering system may be required during construction.

RECLAMATION

Natural Resources: Air Resources

- Fugitive dust (PM2.5 & PM10)
  - Very fine dust particles.
  - Becomes airborne as a result of construction activities.

Asbestos bearing Serpentinite

- Asbestos
  - Group of silicate minerals of fibrous or asbestiform habit, which commonly occur in metamorphic rocks such as Serpentine.
  - Exposure to asbestos fibers has potential human health consequences.
- Regulations & Restrictions
  - The California Air Resources Board and local air pollution control districts have adopted regulations to protect air resources.

RECLAMATION

Natural Resources: Contact

If you have questions or comments, please contact:

Laura Caballero
Natural Resource Specialist
Central California Area Office
Bureau of Reclamation
MIAD_mods@mp.usbr.gov or 916-988-1707

For more information:
http://www.usbr.gov/mp/jfp/index.html

RECLAMATION

RECLAMATION

Managing Water in the West

Comment Sheet for Mormon Island Auxiliary Dam

Comments should be submitted by Monday, January 5, 2009
to Ms. Laura Caballero
Bureau of Reclamation, 7794 Folsom Dam Road, Folsom, CA 95630
or fax 916-989-7109
or MIAD_mods@mp.usbr.gov
Written comments may also be submitted tonight at the Comment Table.

(Please print clearly)

Name _____

Organization and Address _____

_____

_____

Phone ( )_____ FAX ( )_____ E-mail _____

Comment here: _____
Date

_____

_____

_____

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_____

All comments become part of the public record.

PLACE
STAMP
HERE

Ms. Laura Caballero
U.S. Department of the Interior
Bureau of Reclamation
Central California Area Office
7794 Folsom Dam Road
Folsom, CA 95630

Please fold, staple, stamp, and mail

Folsom Dam Improvements

Promoting Public Safety for the Sacramento Region

Folsom Dam and Reservoir are a component of the Central Valley Project, owned and operated by the Bureau of Reclamation, Mid-Pacific Region, Central California Area Office

Construction of Folsom Dam by the Corps began in October 1948 and was completed in May 1956. Folsom Dam was then transferred to Reclamation for operation.

Folsom Dam is a concrete gravity dam 340 feet high and 1,400 feet long flanked by left and right earthfill wing dams. "The Folsom Facility" also includes Mormon Island Auxiliary Dam and eight earthfill dikes. The storage capacity for the reservoir is 977,000 acre-feet at an elevation of 466 feet.

Water was first stored in February 1955. The Folsom Facility provides water for municipal and industrial use and agriculture; generates about 10 percent of local hydropower needs; maintains flows and water temperatures to support fish and wildlife; provides flows for Sacramento-San Joaquin Bay-Delta water quality; and offers recreation for 2 million visitors annually.

Folsom Dam Powerplant capacity is 207 MW. A megawatt (MW) is 1,000 Kilowatts.

Since 1955, Reclamation and the Corps have been working together to ensure the safe maintenance and operation of Folsom Dam. This collaboration has provided more than 50 years of protection for people and businesses downstream as well as power and a reliable water supply.

What is Dam Safety and Flood Protection?

The Bureau of Reclamation and the U.S. Army Corps of Engineers (Corps) have obligations and interests in relation to the Folsom Facility, but they differ with respect to Congressional objectives, mandates, authorities, funding, and timelines. Joint agency objectives met by facility modifications include:

Dam Safety
Under the Safety of Dams Program, Reclamation identified the need for expedited action to reduce hydrologic (flood), seismic (earthquake), and static (seepage) risks. These events have a low probability of occurrence in a given year; however, due to the large population downstream and adjacent to Folsom Dam, modifying the facility is prudent and required to improve public safety.

Flood Damage Reduction
The Corps, in partnership with the Central Valley Flood Protection Board (formerly the State Reclamation Board) and the Sacramento Area Flood Control Agency (SAFCA), identified the need to reduce the risk of flooding in the Sacramento area, one of the most at-risk communities in the Nation.

Project Coordination
The auxiliary spillway, or Joint Federal Project (JFP), represents an unprecedented partnership among Reclamation, the Corps, the Central Valley Flood Protection Board, and SAFCA.

The JFP was developed to coordinate efforts of both Reclamation and the Corps at the Folsom Facility. Through their cooperation, Reclamation and the Corps seek to integrate related dam safety and flood-risk reduction improvements. Additionally, both agencies are planning other improvements separate from the JFP.

When completed in 2015, the JFP's new auxiliary spillway will look like this (artist's rendition). The JFP represents an unprecedented partnership among the Bureau of Reclamation, U.S. Army Corps of Engineers, the Central Valley Flood Protection Board, and the Sacramento Area Flood Control Agency.

US Army Corps of Engineers
Sacramento District

Sacramento Area Flood Control Agency

Folsom Dam Improvements

Promoting Public Safety for the Sacramento Region

Folsom Dam and Reservoir are a component of the Central Valley Project, owned and operated by the Bureau of Reclamation, Mid-Pacific Region, Central California Area Office

Hydrologic Risk & Flood Protection

The Bureau of Reclamation and the U.S. Army Corps of Engineers (Corps) will jointly construct a new spillway to prevent overtopping of any of Folsom Dam's earthen embankments leading to an uncontrolled breach during the largest foreseeable flood events. The spillway will also provide improved flood protection to the Lower American River watershed in conjunction with downstream levee improvements.

Phase I construction includes initial spillway excavation, construction of a haul road, and modifications to the Right and Left Wing Dams starting in late 2007 with completion by 2009. Additional phases of construction will follow with expected completion by 2015.

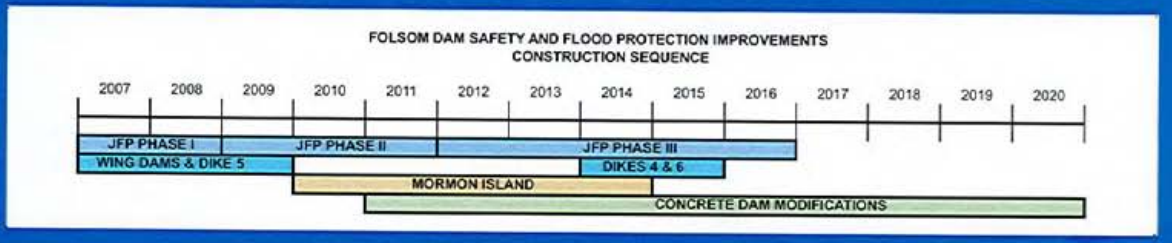
JFP's Auxiliary Spillway

The Joint Federal Project (JFP) auxiliary spillway will have six submerged tainter gates. The spillway will include a concrete control structure that will regulate releases through submerged tainter gates into a concrete-lined spillway chute and stilling basin, discharging directly into the American River downstream of the main Folsom Dam.

The JFP auxiliary spillway will be located southwest of the existing main concrete dam. Principle features of the new auxiliary spillway include:

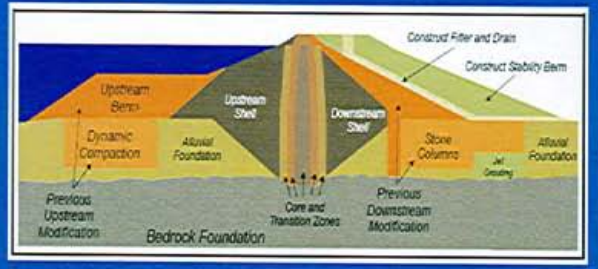
- an approximately 1,000-foot-long approach channel beginning in Folsom Reservoir
- a concrete control structure, including six submerged tainter gates
- a spillway chute approximately 3,000-feet long
- a stilling basin which acts as an energy dissipation structure as discharges enter the American River below the main concrete dam.

The control structure will operate in conjunction with existing spillway gates on Folsom Dam to better manage flood flows from Folsom Reservoir.

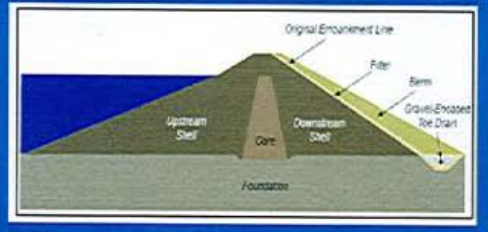


Static Risk

Reclamation will construct modifications to prevent a breach of any of Folsom Dam's earthen embankments caused by water seepage through an embankment.



Proposed modifications to Morman Island Auxiliary Dam



Profile of proposed modifications to Dikes 4, 5, & 6

Additional Dam Safety Improvements

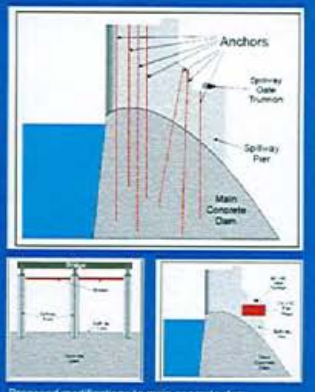
In addition to the JFP, Reclamation will complete additional dam safety work on the Left and Right Wing Dams; Dikes 4, 5, and 6; the main concrete Folsom Dam; and Mormon Island Auxiliary Dam to address seismic and static risks.

Liquefaction

Liquefaction is a phenomenon in which soil strength is reduced by earthquake shaking. Liquefaction can trigger landslides and cause the collapse of dams. Modifications will be made to Mormon Island Auxiliary Dam to reduce this risk.

Seismic Risk

Reclamation will modify the main concrete dam to prevent a breach that could be caused by a large earthquake. Additionally, Reclamation will further stabilize the foundation of and construct a berm at Morman Island Auxiliary Dam to prevent liquefaction.



Proposed modifications to main concrete dam

RECLAMATION
Managing Water in the West

Asbestos

"Asbestos" is a commercial term used to identify groups of silicate minerals of fibrous or asbestiform habit, which have the properties of high tensile strength, flexibility, chemical resistance, and heat resistance. These properties made these minerals useful in many manufactured products and industrial processes during the Twentieth Century. A few examples of the many uses of asbestos include brake and clutch linings, insulation, fireproof textiles, and filtration products. The use of asbestos in manufactured goods and processes in the United States has significantly decreased during the last 30 years because of health concerns related to asbestos exposure, especially among workers in those industries with constant exposure.

Naturally Occurring Asbestos

"Naturally Occurring Asbestos" (NOA) is the term applied to the natural geologic occurrence of any of the types of asbestos. The presence of asbestos in nature is related to the chemistry of rocks in a particular area and the different geologic processes that have acted on those rocks through time. Formation of asbestos requires certain chemical conditions (available silica, magnesium, calcium, iron, sodium, and water) and physical conditions (appropriate temperature, pressure, and possibly stress). These conditions may be present in a variety of geologic settings but are more common in some settings than in others. Areas of faulting and shearing are areas moderately likely to contain NOA. Also, soils derived from asbestos-bearing rocks may contain free asbestos fibers.

Asbestos minerals most commonly occur in metamorphic rocks such as Serpentine. Metamorphic rocks are rocks that have "morphed" into another kind of rock. These rocks were once igneous or sedimentary rocks. How do sedimentary and igneous rocks change? The rocks are under tons and tons of pressure as plates of the earth move against each other during faulting, which fosters heat build up, and this causes them to change.

Serpentine is the California State Rock as it's found widely throughout the State. Serpentine rock is apple-green to black in color and its surfaces often have a shiny or wax-like appearance and a slightly soapy feel. The term "serpentine" is commonly used by the general public to refer to the rock type that geologists call "serpentinite." Serpentine occurs in central and northern California - in the Coast Ranges, the Klamath Mountains, and the Sierra Nevada foothills.

Serpentine is considered by geoscientists to be the metamorphosed remains of ultramafic igneous rocks, most commonly the rock peridotite, from the earth's mantle. The mantle is a thick layer of rock just below the earth's crust with rocks having very high magnesium and iron contents and low amounts of silica. One theory for serpentine formation and occurrence currently in favor with many geoscientists is that peridotite underlying oceanic crustal rocks has been metamorphosed to serpentine in subduction zones that existed at various times in California's past. A subduction zone is an area where ocean crust rocks run into and slide underneath the edge of a continent. Because serpentine has a much lower density than peridotite, it rose toward the surface along major regional thrust faults associated with the subduction zones.

Serpentine rock is primarily composed of one or more of the three magnesium silicate minerals, "lizardite," "chrysotile," and "antigorite." Chrysotile often occurs as fibrous veinlets in serpentine. Chrysotile in fibrous form is the most common type of asbestos. Asbestos is a term applied to a group of silicate minerals that readily separates into thin, strong, and flexible fibers that are heat resistant. Lizardite and antigorite do not form asbestos fibers and instead are plate-like in form. Because serpentine often contains some asbestos, and exposure to asbestos fibers have potential human-health consequences, the California Air Resources Board and local air pollution control districts have adopted regulations restricting the use and disturbance of this rock type.

Sacramento and Placer Counties: To help identify areas in the local region that may contain NOA, the California Department of Conservation, California Geological Survey (CGS), has prepared maps and reports for the Sacramento Metropolitan Air Quality Management District and Placer County Air Pollution Control District. These maps and reports can be found at: http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/east_sacramento.aspx and http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/placer.aspx.

NOA is known to be present in parts of eastern Sacramento County. The geology of eastern Sacramento County is characterized by a variety of igneous, metamorphic, and sedimentary rocks, some of which have been faulted or sheared. The geologic diversity in eastern Sacramento County provides some settings that are favorable for the presence of NOA.

Occurrences of chrysotile asbestos and amphibole asbestos have been reported from several locations in western Placer County. These are most commonly found in areas of ultramafic rocks and serpentinite and in areas of faulting and shearing. Economic geology reports indicate that chrysotile asbestos and amphibole asbestos were observed either within bodies of serpentinite or along their contacts with other types of rock. Commonly, the contacts are faulted or sheared.

El Dorado County: To help identify areas in the County that may contain NOA, a map and report were prepared for the El Dorado County Air Quality Management District by the CGS and can be found at: http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/el_dorado.aspx and a map at: http://www.co.el-dorado.ca.us/emd/apcd/maps.htm.

Reclamation Testing for Asbestos at Folsom Reservoir

Preconstruction Investigations: Prior to the construction of Folsom Dam, Mormon Island Auxiliary Dam, and the eight dikes closing in the Folsom Reservoir rim, the U.S. Army Corps of Engineers conducted extensive field investigations of the materials in the area during the 1950s. Those studies concluded that ***no fibrous materials were noted*** in the amphibolite schist or in the granitic rocks, and the amphibolite schist consists of ***granular*** tremolite and amphibole hornblende minerals.

Recent Investigations: From 2003 to 2007, Reclamation conducted an extensive field investigation program along the shoreline of Folsom Reservoir. These explorations were conducted entirely on U.S. Government property around the reservoir rim between Brown's Marina, in El Dorado County (southeast side of the reservoir), and the east side of the State of California's Granite Bay Recreation Area, in Placer County (on the northeast side of the reservoir). In between these areas is a section of the Folsom Reservoir rim that is located in Sacramento County. The Reclamation field exploration program was conducted to geologically characterize the type and quantities of soil and rock materials present in the area. In addition, testing for the presence of NOA and other hazardous materials was conducted on the rock and soil encountered around the reservoir rim. The entire investigation program consisted of a total of 112 core drill holes and 205 test pits or trenches.

The rock and soil materials encountered during the investigations consisted principally of granitic rocks (quartz-diorite) or amphibolite schist. Minor amounts of Merhten Formation materials were found on ridge tops and recent alluvium in local drainages. The granitic rock underlies Dikes 1 through 7, the Right and Left Wing Dams, and the main concrete Folsom Dam. The granitic rock also underlies portions of the reservoir and makes up the reservoir rim beginning on the east side of Dike 7, on around to the north to include the entire Granite Bay Recreation Area. To the east of the granitic material, on the south side of the reservoir rim (to include under Dike 8, Mormon Island Auxiliary Dam, and the Brown's Marina area) is amphibolite schist of the Copper Hills Volcanic's Formation. Because of the presence of two different materials around the reservoir rim, Reclamation conducted separate investigations of each rock type, the North Shore (granitic materials) and the South Shore (amphibolite schist materials) investigations.

In summary, all materials encountered during the exploration program were inspected by Reclamation geologists using hand lenses and/or a binocular microscope. **No fibrous materials** were observed in any of the materials encountered.

Additionally, to comply with the State of California - Air Toxic Control Measure, the Sacramento Metropolitan Air Quality Management District regulations, and with Sacramento, Placer and El Dorado Air Quality Management District regulations, Reclamation submitted rock and soil samples collected during the investigation for laboratory analysis to determine the presence of asbestos. Independent laboratory analysis of samples collected were accomplished using a Polarized Light Microscope (PLM) and Scanning Electron Microscope (SEM) and found **no fibrous materials present** in the samples and reported no fibrous minerals were present.

To address community concerns, another sampling program was also conducted to specifically investigate and collect samples from the granitic materials encountered around the north shore of the reservoir in the area of Dikes 4 and 5 and along the Mooney Ridge shoreline near Dike 4. Splits of these samples were also submitted to an independent lab for analysis utilizing PLM analysis. They reported that **no fibrous minerals were present** in the granitic materials.

Materials along the northern shoreline of Folsom Reservoir primarily consist of alluvial and/or colluvial deposits overlying quartz diorite (granite) which has been deeply weathered. Alluvial deposits are sediments deposited by flowing water, as in a riverbed, flood plain, or delta, prior to construction of the reservoir that now make up the "beach sands" along the shoreline. Colluvial deposits are materials that move downslope by force of gravity and/or erosion and collect at the base of mountains or foothills, with little or no sorting.

Material within the Dike 5 Borrow Area and designated construction areas are identified as areas least likely to contain NOA by the Placer County Air Pollution Control District (APCD). The Placer County APCD states, "The review of geologic documents and fieldwork did not reveal the presence of NOA in any of these rock types in Placer County." Rock types referred to in this quotation includes the beach sand deposits and granitic rock encountered along the northern shoreline of Folsom Reservoir. The Placer County APCD further states, "The chemical and physical conditions that make other areas more likely to contain NOA are less likely to be present in these rocks." The Placer County APCD requires no asbestos testing for the areas designated for modifications to Dike 5.

In November 2007, five samples of beach sand were collected by Reclamation geologists from about 1.0 to 2.0 feet of depth within the Dike 5 Borrow Area for independent laboratory Transmission Electron Microscopy (TEM) testing and analysis. Samples were collected in accordance with procedures outlined in the California Air Resources Board report: Method 435. Each sample was analyzed at a magnification of up to 20,000X, where submicron-size particles can be observed. TEM test analysis measures the weight percentage of fibrous asbestos minerals within a given sample and provides a quantitative analysis of a given sample. TEM analysis is the definitive test method to quantify the weight percentage of NOA as stated in California Geologic Surveys report, Special Publication 124, Guidelines for Geologic Investigations of Naturally Occurring Asbestos, states that TEM is a definitive method to quantify percentages of asbestos. TEM analysis of all five samples submitted reported negative results for the presence of NOA. Weight percentages reported in TEM analysis found no asbestos in any of the five samples tested.

Conclusions

Data collected by or reported to Reclamation provides conclusive evidence that NOA minerals are not present within the sampled native materials from the Dike 5 Borrow Area and are highly unlikely to be encountered under foreseeable circumstances. In the south shore areas of the project, testing to date has not positively identified and confirmed presence of NOA minerals, but due to the type of geology and rocks encountered, it cannot be proven conclusively that NOA minerals are not present. Although NOA is unlikely to be encountered in the south shore area, Reclamation will take precautionary measures in accordance with all required air quality permits and other requirements to reduce any potential for NOA to become airborne through the action of construction activities.

Appendix C

Scoping Comments

From: craig amolsch <camolsch@hotmail.com>
To: <miad_mods@mp.usbr.gov>
Date: Tue, Nov 25, 2008 1:03 PM
Subject: Morman Island Repairs

I assume this is part of the overall flood project taking place at Folsom Lake. What I don't understand, is that Dam (or dyke) appears to have been under repair for several years. Is this a seperate project? What is being done that wasn't done from the extensive work performed previously?

From: david luna <daveluna82@yahoo.com>
To: <miad_mods@mp.usbr.gov>
Date: Wed, Nov 26, 2008 9:32 AM
Subject: Morman Island

Any dirt removed from Mormon Island should be put outside of the Lake.

The last time dirt was removed from Mormon Island; The dirt was dumped into the Lake!! Which reduced the water capacity of the Lake.

I saw the mounds of dirt on my Depth Finder on the bottom about 25 yards South West of Mormon Island. This should not happen again.

Sincerely yours: David R Luna 2020 Waterford Rd Sac.CA 95815, 916-333-1211.

COUNTY OF PLACER
Community Development Resource Agency
John Marin, Agency Director

ENVIRONMENTAL COORDINATION SERVICES
Gina Langford, Coordinator

FACSIMILE COVER SHEET

TO: Laura Caballero **FAX #** 916-989-7109

FROM: Peg Rein, ECS Secretary **DATE:** December 31, 2008

SUBJECT: **MIAD Modification Project, NOP**

PAGE # INCLUDING THIS COVER SHEET 1

MESSAGE:

5 - El Dorado Hills Dec 4
25 attendees - Folsom Dec 2

The ERC (Environmental Review Committee) has reviewed the above-mentioned project for concerns relating to Placer County and has no comments or questions regarding the subject project.

exposed upstream table MIAD (thought it was fill)
costs display
keep green valley road open
keep Browns Ravine trail open
why are we compacting MIAD again
AQMD Concerns Truck Loads
others - unrelated to project footprint