

Nevada Irrigation District

2015 Dam Safety Activities Report

Nevada Irrigation District (NID) owns and operates 15 dams under the jurisdiction of California Division of Safety of Dams (DSOD). All of these dams, except two (Loma Rica and Deer Creek Diversion Dams), are also under the jurisdiction of Federal Energy Regulatory Commission (FERC). These two regulatory agencies enforce their respective comprehensive dam safety programs on the jurisdictional dams. The Hydroelectric Department is the District's lead in all dam safety issues, with support from the Engineering, Water Operations, and Water Maintenance Departments. In addition to satisfying the regulatory requirements, the Hydroelectric Department has its own ongoing improvements of various dam-safety related facilities and ancillaries. The following summarizes the dam safety activities performed in 2015 by the District:

1. Inspections and Monitoring

In addition to the District's weekly (as conditions permit) and monthly inspections of the dams, DSOD performed their annual inspections in September 2015. FERC performed their annual inspections in February and April, 2015. The District also submitted its own annual Dam Safety Surveillance Monitoring Reports to FERC and DSOD. (Note: The upper-country dams are remotely inspected from a helicopter approximately monthly when the dams are covered in snow and the access roads are not passable.)

2. Evaluations and Assessments

FERC and DSOD required updates to evaluations regarding seismic stability, probable maximum floods, spillway/radial gates performance, penstock/inlet/outlet/valve condition, and several other subjects. In 2015, the District revisited the preliminary design for protection against scouring at Combie Dam higher abutments under probable maximum flood. Considering possible instability at the higher abutment blocks of the dam, the District planned to integrate the solutions for the scour protection and dam stabilization when the stabilization issue is identified at a later study. In November 2015, the District submitted to FERC and DOSD for review and approval Site-Specific Seismic Hazard Analyses, which laid out all the potentially active faults and their earthquake magnitudes for seismic stability analyses of the 15 dams.

3. Emergency Action Plans (EAPs) and Exercise

As mandated by FERC, the District updated and submitted the EAPs for the high-hazard dams on the Middle Yuba, South Yuba, and Bear River Watersheds. The EAPs are for emergency notifications to the public in the event of an unlikely dam failure or other abnormal high flow event. An internal EAP make-up training was provided to involved District staff on 1/06/2016. In addition, an EAP outreach meeting was held on 10/29/2015 with participation from local authorities and several other agencies and companies involved in the emergency actions.

4. Dam Safety Training

Annual dam safety inspection training was provided on January 28, 2015 to 24 District staff members involved in the inspections of District dams.

5. Other Improvements and Activities

In 2015, the District

- Constructed the Bowman North outlet control structure and installed one 66-inch butterfly valve and one 48-inch Howell-Bunger valve.
- Repaired the damaged shotcrete facing and the underdrains on the downstream face of Bowman South Dam. Due to difficult site access, a helicopter was used to transport the equipment, tools, and materials necessary for the repair.
- Repaired a void over the bedrock subgrade just below the upstream face of the spillway crest structure at Dutch Flat Afterbay.
- Performed an ROV video camera inspection inside the outlet tunnel at Bowman North. The leakage through the inlet Broome gate was found to be approximately the same as decades ago.
- Performed an underwater plunge pool inspection of the toe area of Milton Diversion Dam to check for any under scouring from spilling over the dam. No significant scouring or damage was discovered.

6. Summary of Significant (>\$100,000) Modifications to Dams Completed in 2015

Dam	Type	Year Constructed	Summary of Modification
Bowman North	Concrete-Faced Rockfill	1927	Construct an outlet control structure, repair outlet tunnel lining, and install one butterfly and one Howell-Bunger valve.
Bowman South	Concrete Arch Dam	1927	Repair downstream shotcrete facing and its underdrains.