

Nevada Irrigation District

2017 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, 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 on-going improvements of various dam-safety related facilities and ancillaries. The following summarizes the dam safety activities performed in 2017 by the District:

1. Inspections and Monitoring

In addition to the District's weekly (as conditions permit) and monthly inspections of the dams, DSOD and FERC performed their annual inspections in September and October 2017. (Note: The upper-division dams are inspected approximately monthly from a helicopter when the dams are covered in snow and the access roads are not passable by a regular vehicle.) The District also submitted its own annual Dam Safety Surveillance Monitoring Reports to FERC and DSOD.

During the early 2017 storms, it was found that the old concrete chute slabs of Scotts Flat Spillway experienced recurring damages including spalling, steel rebar displacements, and joint damages. Extensive repairs were performed in 2017 to meet the requirements of the regulatory agencies.

2. Evaluations and Assessments

In the wake of the Oroville Spillway incident in early 2017, FERC and DSOD required that the District evaluate the safety of the following six District spillways: French Lake, Faucherie, Jackson Lake, Jackson Meadows, Rollins, and Scotts Flat. All the spillways appear to be performing adequately with the exception of the lower portion of the Scotts Flat spillway, which was constructed in the 1940s and does not meet modern design standards. Preliminary investigation into the Scotts Flat spillway was completed in 2017. The District plans further investigations in 2018 to fully characterize the subsurface materials which will lead to a proposal of spillway upgrades for review and approval by regulatory agencies.

The District finalized the seismic hazard analysis and ground motions for all of the 15 dams. The ground motions are to be used for the FERC-required seismic stability analyses starting in 2018.

3. Emergency Action Plans (EAPs) and Exercise

EAPs are created as a means to provide emergency notification to the public in the event of a potential dam failure or other abnormal high flow event. To meet the new EAP requirements from DSOD and the California Office of Emergency Services, the District submitted all

inundation maps and EAPs, including those newly developed for Deer Creek Diversion and Loma Rica Dams, for their review and approval.

As mandated by FERC, the District updated and submitted the 2017 EAP status report for approval. In addition, an integrated EAP outreach meeting including 21 individuals and 12 emergency response agencies was held on September 20, 2017 at the District Grass Valley Headquarters.

4. Dam Safety Training

The annual dam safety inspection training was provided in December to 25 District staff members involved in the inspections of District dams.

5. Other Improvements and Activities

In 2017, the District

- Replaced the malfunctioning 12” fish-flow valves in the outlet tunnel of the Dutch Flat Afterbay, using underwater services to plug and reopen the upstream end of the fish flow pipe in the outlet tunnel.
- Performed extensive repairs of the damaged concrete slabs and joints at Scotts Flat Spillway chute.
- Conducted a preliminary investigation for evaluation of the Scotts Flat Spillway, including drilling 8 concrete spot holes and 3 test borings to find properties of the subgrade materials.
- Ordered a 60” fixed-cone valve for replacement of the current valve, which is nearing the end of its useful life, at the Rollins Dam. The replacement construction is scheduled for late 2018 or early 2019.
- Completed an inspection of the low-level outlet pipe at Sawmill Dam. The riveted steel outlet pipe appears to be in generally acceptable condition with some rusty spots on mostly the upper portion of the pipe.
- Removed and rebuilt the drain valve stem at Milton Dam which was likely damaged by log debris during high flows.

6. Summary of Significant (>\$100,000) Modifications to Dams Completed in 2017

Dam/Facility	Type	Year of Original Construction	Summary of Modification
Scotts Flat Spillway	Concrete lined chute	1947	Repaired major spalls and other damages at concrete slabs and joints of the old spillway chute.
Dutch Flat Afterbay Fish Valves	12” gate and butterfly valves	1960s–1980s	Replaced the malfunctioning valve with two stainless steel knife edge gate valves.
Loma Rica Dam	Low level outlet pipe	1965	Slip-lined the outlet pipe, installed new inlet and outlet valves, and added catwalk for inlet valve operations.
Rollins Outlet Valve	60” fixed cone valve	1960s	Ordered a stainless steel fixed cone valve to replace the existing malfunctioning valve.