

The post storm inspection revealed the additional temporary water quality protections prevented soil from leaving areas of construction disturbance during the significant precipitation event.



Photo taken on October 5, 2016 prior to placement of Water Board required temporary BMPs to prevent soil from leaving the construction area.

Lahontan Water Board staff also travelled to the Susanville area to perform two separate timber pre-harvest inspections with CalFire and Sierra Pacific Industries representatives. The timber projects are proposed harvests on private industrial forestlands where staff reviews planned water quality protections for proposed and existing logging roads, water course crossings, winter operations, and monitoring plans. The inspections revealed little evidence of significant erosion due to the storm event.

## **7. Tahoe Keys Property Owners Association Integrated Management Plan Community Meeting, El Dorado County - Bruce Warden, PhD**

On November 1, 2016, the Tahoe Keys Property Owners Association (TKPOA) held a community meeting to discuss updates to its Integrated Management Plan (IMP) for control of aquatic invasive plant species (AIS) in the Tahoe Keys. The Lahontan Water Board required TKPOA to submit annual updates to its IMP by January 31 each year.

Updates to its IMP since 2015 include improved aquatic weed harvesting technology, major improvements to fragment collection with purchase of two new fragment collecting machines, and an expanded homeowner education program. TKPOA proposes new field tests for non-chemical methods of AIS control, including rotovating to remove entire rooted AIS plants, diver-assisted hand pulling, and UV light treatments.

The status of AIS weed populations in the Keys lagoon and Marina lagoon, as well as the extent of lake-wide AIS weed infestations was updated with 2016 season surveys. The 2016 survey in the Keys discovered a new outbreak of curly leaf pondweed in the east marina lagoon channel, which extends into Lake Tahoe. The new infestation poses a challenge because the east marina lagoon and channel shared waters between all the property owners in the marina lagoon: TKPOA, Tahoe Keys Marina (TKM), Tahoe Keys Beach and Harbor Association (TBHA), and California Tahoe Conservancy (CTC). TBHA and CTC have been supportive of TKPOA's non-chemical AIS control efforts, but TKM has not been a willing participant and does not support TKPOA's efforts. TKPOA has ceased routine aquatic weed harvesting operations in the TKM lagoon because of long-standing lack of cost sharing by TKM for ongoing control efforts. Without timely action to control the new infestation curly leaf pondweed in the east channel, further spread of this AIS may be exacerbated by boat traffic exiting the TKM lagoon. Lahontan Water Board staff are following up with TKM directly.

TKPOA's AIS Coordinator presented operational improvements and monitoring efforts. Current control methods include: weed fragment control, back-up boat station to remove weeds from boat propellers prior to watercraft exiting the Keys lagoon and entering Lake Tahoe, bottom barriers, lake-friendly landscaping, biological controls and circulation system-treatment plant assessment. Ongoing monitoring efforts are focused on water quality parameters, benthic organisms, and nutrient loading from lagoon bottom sediments.

Dr. Lars Anderson presented results of ex-situ mesocosm herbicide trials, two rhodamine dye studies, and the efficacy of using double barriers to prevent dispersal of a future herbicide use in the Keys

lagoons. Movement of rhodamine dye from the lagoons to open water in the Lake did not occur during spring time when snowmelt runoff caused water flow from Lake Tahoe into the lagoons, effectively containing the dye within the TKPOA lagoons. However, when Lake Tahoe had ceased rising after the snow melt runoff diminished later in late June, the dye moved partly through the west channel into Lake Tahoe, and partly to the south and west. This study emphasized the importance of proper timing of any potential future herbicide applications.

To determine the efficacy of using double barriers, Dr. Anderson assessed two double barrier sites for 21 days. Double curtains retained 98-99% of dye (1-2% entered between curtains. The implication is that aquatic herbicides can be contained by double barriers.

About 50 public members attended the meeting and asked questions included the status of the UV AIS treatment pilot-scale study and status of control of AIS in the Tahoe Keys Marina. The UV study is likely to obtain full private funding and commence a field trial in the Tahoe Vista Marina in 2017. TKPOA has contributed \$15,000 to the study, and is working with the UV treatment proprietor on a small demonstration project in the TKM lagoon next year. TKPOA is actively evaluating AIS control methods considered in the IMP in the Tahoe Keys lagoon (west channel). TKPOA has halted work in the TKM lagoon (east channel) because TKM has not developed its own IMP to address its AIS weed infestation, and TKM is not coordinating with TKPOA on AIS weed removal planning and implementation.

Further Information about the TKPOA public meeting and TKPOA's meeting presentation are available at: <http://www.keysweedsmanagement.org/#meetings>

## **8. Upper Truckee River Reach Five Restoration Project – Laurie Scribe**

During the 2016 field season, the United States Forest Service – Lake Tahoe Basin Management Unit (LTBMU) constructed the final phase of its Upper Truckee River Reach Five Restoration Project (Project) that was permitted and initiated in 2013. This project, located within the City of South Lake Tahoe, included construction of approximately 7,400 feet of new river channel to replace the existing incised and eroding channel and improve meadow, riparian, and aquatic resources (see attached map). Project construction occurred during the 2013, 2014, and 2016 field seasons, with the new river channel connected to the existing river in October 2016.

The LTBMU encountered several design and implementation problems during the 2016 field season which resulted in Lahontan Water Board staff requiring plans for corrective action. The Project fell several weeks behind schedule during the 2016 field season and the LTBMU requested a grading variance to complete critical construction elements, including the upstream connection to the existing river, after the Lahontan Water Board's October 15 soil disturbance prohibition deadline. Two significant storm events in October caused erosion of disturbed soil areas, and resulted in sediment and turbid water discharges to the Upper Truckee River. High flows associated with the first October storm forced the LTBMU to implement emergency response measures and complete construction work within the active Upper Truckee River channel. In addition, the LTBMU did not acquire sufficient fill material to complete backfilling of the historic river channel in conformance with the approved design plans (shown on map). During the high flow conditions in October, surface water flow was observed bypassing the newly constructed upstream connection area and flowing down the partially backfilled historic channel, resulting in erosion of fill and damage to the newly constructed river channel banks. Design problems included complications associated with two previously unaccounted for airport storm drain system outfall culverts that convey storm water into the historic channel as well as the presence of upstream drainages and swales acting as preferential pathways conveying surface water during high flow events into the partially backfilled historic channel.

The high flows in the Upper Truckee River and the resulting erosion of disturbed soil areas lead to water quality violations of permit conditions. Lahontan Water Board staff has entered these violations