



**TRI SAGE CONSULTING**  
**Monthly Report**  
**Carson Truckee Water Conservancy District**

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August 4, 2014

**MONTHLY ACTIVITIES**

- 1) Finalize modifications to Virginia Street Bridge (VSB) Encroachment Permit as agreed to by the USACE. Finalize documents and completed execution by CTWCD and City of Reno. Permit has been sent to USACE for execution upon completion of City Permits.
- 2) Continued running updated TRFMA 14,000cfs flow model and evaluating model needs outside of downtown areas as well as continued evaluation of shoaling deposits;
- 3) Prepare survey documentation needs for model section updates for box culvert sections;
- 4) Conference call with TRFMA and modeling team regarding possible LIDAR aerial surveying of river channel once river flows decline due to drought conditions.

**UPCOMING ACTIVITIES**

- 1) Work with TRFMA to pursue LIDAR aerial survey of the river channel while flows are reduced.
- 2) Continue review of debris removal work for 2014; and evaluate alternative projects such as shoal removal and permitting requirements.
- 3) Survey of areas downstream of Keystone Avenue bridge for HEC-RAS Modeling of possible shoal/problem area where water leaves the channel at 14,000cfs;
- 4) Survey of areas around Idlewild Box Culvert for HEC-RAS Modeling of box culvert impacts at 14,000cfs;
- 5) Evaluate additional needs for model updates upstream of Keystone Avenue to State Line and downstream of Lake Street to Glendale Bridge.
- 6) Run 14,000cfs steady state HEC-RAS flow model to establish water surface elevations along key river locations to evaluate issues; complete sections upstream and downstream of downtown.
- 7) Continued coordination with USACE regarding 14,000cfs model outcomes and evaluation of channel walls in downtown Reno and appropriate application/confirmation of SWIF process eligibility;
- 8) Continued coordination with City of Reno for 1) Flood Response evaluation and incorporation of Interim Risk Reduction Measures into their plan, 2) Flap-gate Installation needs and project, 3) Vegetation Variance for trees along channel- not expected to be necessary due to interim order, 4) Box Culvert facility evaluation and potential removal project;

- 9) Draft Vegetation Variance Application for Trees in Vegetation Free Zone if applicable under SWIF; confirm eligibility with USACE.
- 10) Finalize the Equipment Access/Entry Point Documentation and Mapping for the District Jurisdiction;

## **SUMMARY REPORT**

River flows have dropped as of July 29<sup>th</sup> and 30<sup>th</sup> when rate water was exhausted for supply to the river flows and the only waters entering the river are from the rim controlled Lake Tahoe and minor creek flows. The river flow is expected to continue to drop as Lake Tahoe levels drop toward the rim. CTWCD met with the TRFMA regarding the possibility of getting some aerial survey data for the river modeling during this low flow time. TRFMA is pursuing cost estimates for this work and CTWCD may be able to participate in some funding of this work in order to get some upstream survey data for river modeling that is within the CTWCD jurisdiction but outside the TRFMA jurisdiction. This is a unique opportunity with the river flows expected to be so low this fall.

The USACE has agreed to modifications to the Virginia Street Bridge encroachment permit with the allowance that the City can work within the channel from November to June with written authorization from the CTWCD Board. This condition is acceptable to the CTWCD as all other permit conditions are in place to insure the channel is cleared during an event of 8000cfs or more, that the 14,000cfs capacity of the channel is always maintained, and that the City is responsible for all potential issues. The permit has been revised to incorporate this USACE modified provision and has been executed by both the CTWCD and the City of Reno. The final permit execution by the USACE is waiting closure on some 404 Permit issues with the City and the USACE Regulatory Branch. Currently the schedule for Virginia Street Bridge construction will be for a start of work in 2015 as soon as river conditions permit.

Since the May 2014 monthly report, no further discussion has been had with the USACE regarding the determination of "Floodwalls" versus "Channel walls" through the downtown Reno river corridor; however this is an issue that will be pursued for some resolution as it impacts other inspection issues as noted below.

The Status of USACE inspection issues are noted below and the status remains unchanged since July's Monthly report except for the noted change in the river flow reduction from July to the current timeframe of mid-August:

- 1) Shoaling- the shoaling deposits identified by USACE have been included in the recent modeling and at the current stage are NOT impacting the 14,000cfs flow. The USACE requested sensitivity analyses have been performed and indicate that doubling the size of the shoaling deposits does NOT push the waters out of the banks in any of the four areas identified during the inspection. There is a new area of possible shoaling identified downstream of Keystone Avenue Bridge that may be the cause of 14,000cfs flows leaving the banks along Riverside Drive; this area will be surveyed( probably once river flows drop out in mid-August) and deposits evaluated to get data for further evaluation in the model.

- 2) Flap-gates- Now that we have model water surface elevations in the downtown areas, the City of Reno will evaluate each penetration relative to the water surface elevation at 14,000cfs. Once we have the model updated and run at the reaches upstream and downstream of the downtown areas to produce water surface elevation data, the City of Reno will continue their evaluation on the storm-drain penetrations into the channel.
- 3) Vegetation- vegetation along the walls and growing from the walls was removed by the City of Reno as part of the 2013 Debris Removal Project; however during the inspection it was noted that vegetation is developing again. This will be cut back as part of the 2014 project work. Potential determination of the walls as channel walls, not floodwalls means that there is no “vegetation free zone” requirement and other than the short section that the USACE might determine to be floodwalls, vegetation may become a moot point once specific determination is confirmed.
- 4) Idlewild Box Culvert/Bank Erosion- the model needs to be evaluated and updated in this section; additional survey data( which will be collected in mid-August after the River flows drop) is required as the model contains minimal cross-sections in this reach. Once the model is updated with additional survey data, it will be run to determine the impact of the box and the need for removal. It is anticipated that this box will need to be removed to reduce the erosion of the Idlewild Drive bank. USACE is awaiting evaluation results and proposed solutions for this reach.
- 5) Flood Response- It appears from the current modeling that the 14,000cfs water surface elevation is below the horizontal surface in all areas downtown except for the West Street Plaza area. There was no approved encroachment by the USACE or the CTWCD for this project including the removal of the walls and railings along this section of river. The USACE has requested that the CTWCD work with the City of Reno to propose Interim Risk Reduction Measures that can be reviewed and approved by the USACE and incorporated into the City’s Flood Response Plan. It is not clear at this writing what the requirements will be relative to the placement of plywood along the railings and walls as called for in the Martis Creek Agreement now that it is apparent from the modeling that the 14,000cfs flow is below the top of wall and below the horizontal surface in all sections except the West Street Plaza.

Next steps include the evaluation and running of the model in reaches above and below the Keystone to Lake Street areas for the determination of water surface elevations. Additional survey data will be collected, once river flows drop in mid-August, at the sections below the Keystone Avenue Bridge where the water leaves the channel at 14,000cfs and at the Idlewild box culvert as well as other sections where the modeling efforts may require additional sections. The modelers will analyze the box culvert and also perform sensitivity on the shoaling areas to determine if and when these areas will become problematic to the flow. The City of Reno will work to address the flap-gate needs as well as the Interim Risk Reduction Measures for the West Street Plaza. At this time it is anticipated that work May need to be done to remove deposits in the river near Keystone Avenue and to remove the box culvert at Idlewild Drive. The exact requirements of these potential projects are still under evaluation.

The City of Reno has begun vegetation removal work in the channel in the shoaling upstream of Arlington Bridge and along the ditch intake downstream of Arlington. Modeling indicates that removal of vegetation from shoaling improve the channel capacity. Reno will also be removing

some vegetation and possibly some tree debris behind the Riverfront Condos on Idlewild drive. Work continues by Tri Sage to identify debris that should be removed during 2014 prior to the winter flows. It is anticipated that this requirement will be substantially less than the project completed in late 2013.

### **RECOMMENDATION**

It is recommended that the Board of Directors continue to pursue the inspection/evaluation items as outlined in this report. It is further recommended that the Board reserve funding for potential projects including debris removal and until the evaluation of the channel deposits below the Keystone Avenue Bridge and the box culvert are complete and determination is made of project needs and timelines. It is recommended that the Board consider a contribution to the aerial survey work to be completed by TRFMA in order to survey sections that are in the CTWCD jurisdiction for modeling purposes.