



TRI SAGE CONSULTING
Monthly Report
Carson Truckee Water Conservancy District

August 3, 2015

MONTHLY ACTIVITIES- July 2015

- 1) Monitor Virginia Street Bridge work for Encroachment Permit.
- 2) Update model with LIDAR survey upstream of Kietzke Bridge.
- 3) Plot 14,000cfs georeferenced water elevations on Martis Agreement Plates; Compare with City of Reno as-builts for Riverside walls compared to assumed water elevations.
- 4) Pursue old version of the HEC-2 model which may have been the source of the Martis Agreement water elevations; contact USACE Flood for any file data related to the origin of the water elevations in the agreement.
- 5) Review of TMWA Drought Encroachment Permit Application & recommendation to District for Approval; Work with USACE regarding the TMWA 408 Permit Application and any technical requirements;
- 6) Emails with USACE requesting requirements 408 Permit for temporary/emergency channel diversions.
- 7) Research temporary flood control measures and request budget level pricing.

UPCOMING ACTIVITIES

- 1) Evaluate the updated model sections near Kietzke Bridge for evaluation of shoaling deposit.
- 2) Evaluate temporary flood control measures including cost, storage, installation requirements and options for West Street Plaza and Riverside Drive.
- 3) Plan channel maintenance projects, including annual debris removal project and secure permits/authorizations for work.
- 4) Evaluate additional needs for model updates upstream of Keystone Avenue to State Line and downstream of Lake Street to Glendale Bridge; possibly needed for upcoming 408 Encroachment evaluations.
- 5) 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.
- 6) Schedule a meeting with USACE Regulatory Branch (moved out to August-September 2015 pending model information) to discuss project work including debris removal, shoaling deposits and box removal.
- 7) Schedule a meeting and with USACE Flood Control Branch (October 2015) regarding inspection issues, West Street Plaza, 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 Flood Response plan, 2) Flap-gate Installation needs assessment and project and 3) Vegetation Variance for trees along channel- not expected to be necessary due to interim order.
- 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

Tri Sage with Dyer Engineers is continuing to evaluate the historical Riverside Drive information that the City of Reno has made available and to compare current conditions to the Martis Creek Agreement plates/elevations. There are some apparent inconsistencies which have been identified and will be documented in a report once evaluations are complete. This information indicates that the channel has changed very little since 1957; however the source of the 14,000cfs water surface elevations plotted in the agreement seems to be much lower than would have been expected from all other sources when compared and georeferenced. This information is expected to be important to the issue of waters leaving the banks along this section in a 14,000cfs event as was verified during the 2005/2006 event of that magnitude. Tri Sage is continuing to evaluate options for temporary flood control measures that might be used along Riverside Drive and at the West Street Plaza areas to contain flood flows.

The City of Reno is continuing with their review of the Flap-Gate requirements in order to address the USACE inspection issue; work is progressing well on this project.

The Virginia Street Bridge project is in full swing and the work is progressing well. Currently the the river encroachments include k-rails and gravel bags along both the right and left river banks with the river flowing between the two diversions. During small summer storm events the barriers have overtopped, but the works areas have remained mostly dry. At this point with the reservoirs almost empty and Reno gauge river flows below 30cfs, it is expected that the project will continue to enjoy favorable flow conditions for the river work with only periodic storm events. Tri Sage continues to periodically monitor this work for the channel encroachment and continues to monitor the weather and predicted flow events.

The flow model was updated to review the potential shoaling deposit just upstream of the Kietzke Bridge and work is underway to evaluate the model output and whether channel work may need to be completed in this section.

The following section is repeated from prior reports(updates in Italics):

Notably, the USACE has yet to issue their inspection report from April 2013. As a reminder, the USACE criteria for rehabilitation funding and notifications changed late in 2013 such that the CTWCD inspection issues are not subject to loss of the rehabilitation funding nor notification.

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 removal of the Box Culvert at Idlewild Drive and other italicized sections.

- 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. The Keystone Avenue Bridge area has been eliminated as a shoaling deposit.
- 2) Flap-gates- *The City of Reno has engaged an engineer to evaluate each penetration relative to the water surface elevation at 14,000cfs through the downtown reach.* 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. Tri Sage was able to get GIS data for the storm drain locations to correlate to model flow elevations.
- 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 was too minor to address in 2014 and will be cut back as part of the 2015 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 box culvert encroachment was removed in October 2014 and once the flow has an opportunity to re-establish in the unobstructed channel the bank erosion on the Right Bank will be further evaluated if necessary.*
- 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. *The City of Reno is working with the potential developer on this matter and will propose temporary measures at a minimum.* 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. Discussion with agencies regarding the sections along Riverside Drive Bridge where the water leaves the channel at 14,000cfs and evaluation of mitigation options. The City of Reno is working to address the flap-gate needs as well as the Interim Risk Reduction Measures (IRRM) for the West Street Plaza. Director Penrose and Tri Sage will plan a meeting with the USACE Flood Control Branch in September or October of 2015 to discuss the inspection report and associated issues; this will give time for several items to be addressed including the flap-gates and the IRRM.

RECOMMENDATION

It is recommended that the Board of Directors continue to pursue the inspection/evaluation items as outlined in this report.