



TRI SAGE CONSULTING
Monthly Report
Carson Truckee Water Conservancy District

September 1, 2015

MONTHLY ACTIVITIES- July 2015

- 1) Monitor Virginia Street Bridge work for Encroachment Permit.
- 2) Set up meeting for September 8, 2015 to discuss river work with USACE Regulatory Branch.
- 3) Evaluate plots of 14,000cfs georeferenced water elevations on Martis Agreement Plates; Compare with City of Reno as-builts for Riverside walls compared to model water elevations.
- 4) Inspect 6500 Stagg Lane encroachment for removal.
- 5) Inspect river areas and create 2015 Debris Removal Scope of Work document.
- 6) Work with City of Reno on Entry Authorization License for channel maintenance access.
- 7) Contact TRFMA in pursuit of old version of the HEC-2 model which may have been the source of the Martis Agreement water elevations.
- 8) Evaluate shoal deposit upstream of Kietzke Bridge.
- 9) Discuss river permitting and vegetation removal with adjacent property owner.

UPCOMING ACTIVITIES

- 1) Evaluate temporary flood control measures including cost, storage, installation requirements and options for West Street Plaza and Riverside Drive.
- 2) Plan channel maintenance projects, including annual debris removal project and secure permits/authorizations for work.
- 3) 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.
- 4) 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.
- 5) 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.
- 6) 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.
- 7) Draft Vegetation Variance Application for Trees in Vegetation Free Zone if applicable under SWIF; confirm eligibility with USACE.

- 8) Finalize the Equipment Access/Entry Point Documentation and Mapping for the District Jurisdiction;

SUMMARY REPORT

Tri Sage with Dyer Engineers has continued to evaluate the Riverside Drive section. Water surface elevations from the updated HEC RAS model have been compared with the and plotted on the Martis Creek Agreement plates for comparison and as well as on the Arlington Wall As-built drawings supplied by the City. River sections from a 1957 survey have been compared to the recent channel survey sections and this comparison reveals that there has been little change to the channel since 1957; or at least no changes significant enough to account for the updated water surface elevations noted and calibrated against the 2005/2006 flood in the current model. TRFMA has been contacted to see if they can supply the old model for comparison and understanding of this section. The plots will be shared with the Board at the upcoming meeting.

Tri Sage visited the 6500 Stagg Lane encroachment to find that the diversion rocks are still in place and the encroachment has not been removed as previously committed to during the low flows.

Tri Sage has developed a scope of work for the possible 2016 debris removal project. In addition, Tri Sage has been working with the City of Reno on an extended 2year Right of Entry Authorization License and has compiled the complete list of City properties that may be use for District channel maintenance project work and access to the channel. A draft of the agreement should be available by the District Board meeting date.

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. The bridge footings are being formed and poured near both banks of the channel. Several temporary concrete pads have been poured in the river bed on the north side to support the construction bents that will be required to support the bridge during construction and these pads will be removed once the project is complete. The river diversion will need reset to put flow down the more northern area in order for more temporary pads to be placed on the south side of the channel. The new footing for the channel wall is underway upstream on the north bank near the Masonic Building. Tri Sage continues to periodically monitor this work for the channel encroachment and continues to monitor the weather and predicted flow events.

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.