TRI SAGE CONSULTING
Monthly Report
Carson Truckee Water Conservancy District

March 2, 2015

MONTHLY ACTIVITIES- FEBRUARY 2015

1) Surveyed bank at 3305 Idlewild Drive to update model cross section and determine encroachment permit requirement.
2) Reviewed HEC RAS model and mapped water surface elevations at 3305 Idlewild Drive to evaluate possible encroachment; emailed parties regarding pier encroachment.
3) Reviewed Stagg Lane river rock movement; drafted and mailed letter notifying owner of permit requirement.
4) Evaluate output of flow model along Riverside Drive, drafting findings memo.
5) Respond to Toscano Townhomes inquiry regarding river rocking project requirements.

UPCOMING ACTIVITIES

1) Finalize evaluation of the updated flow model results along Riverside Drive and findings related to historical river bed configurations; collaborate with TRFMA regarding the model updates in this area.
2) Evaluate options for containment of flow along Riverside Drive, if any are necessary, in conjunction with TRFMA and City of Reno.
3) Evaluate additional needs for model updates upstream of Keystone Avenue to State Line and downstream of Lake Street to Glendale Bridge.
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 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 plan, 2) Flap-gate Installation needs and project and 3) Vegetation Variance for trees along channel- not expected to be necessary due to interim order.
7) Finalize Virginia Street Bridge Replacement Project encroachment permit once other regulatory permits are issued.
8) Draft Vegetation Variance Application for Trees in Vegetation Free Zone if applicable under SWIF; confirm eligibility with USACE.

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

SUMMARY REPORT

During February Tri Sage surveyed the river bank and obtained deck/pier elevations at the potential encroachment at 3305 Idlewild Drive. This survey information was necessary for the District to update the flow model in this section in order to be able to determine if the structure, or any portion of the structure, is an encroachment into the 14,000cfs flood channel. The cross section is attached which indicates that only a portion of the deck piers are within the 14,000cfs flow channel under the jurisdiction of the District. Based on this data, the owner, the City of Reno and the Nevada Division of State Lands were provided this information related to the encroachment. The owner was provided with a copy of the District's Application for Encroachment as well as the Encroachment Application Checklist in case the owner would like to retain the structure with the appropriate permit. The second deck identified upstream has not been addressed at this writing as the owner appears to be out of town and has not responded to the City of Reno's request.

Tri Sage was notified by Washoe County Parks that a rock moving activity was taking place in the river channel along the property at 6500 Stagg Lane, just downstream of Mayberry Bridge. Tri Sage drafted a letter to the property owner which was approved and signed by Superintendent Penrose and mailed to the property owner. The letter advises the property owner that this rock moving/placement activity may require a flood channel encroachment permit from the District, as well as many other permits from other agencies, and provided website links to the District's Encroachment Permit Application and Checklist. The notice letter was copied to other agencies that may require permits for such activities. It is not clear what is trying to be accomplished with this river rock placement; however it is causing some level of obstructions in the river channel (photo enclosed).

The District office receive a call from Toscano Townhomes regarding a possible project they would like to permit to place rocks along the bank of the channel along their property to deter the beavers from burrowing into their property and creating dens below the surface. The District's Encroachment Permit requirements were discussed with the Toscano representative and they were provided with other agency information to discuss other permitting needs. They will evaluate the project with an engineer and get back to us if they decide to move forward. Tri Sage will monitor this site for construction activity that might require a permit.

The evaluation of the Riverside Drive flow model has been completed and no historical records or photos were identified that offered any additional information as to if and when changes have occurred in this river section. The variations noted in the model elevations in this section may well be due to the accuracy of the original model survey and the elevations estimated for the Martis Creek Agreement evaluation of flow channel capability which would have required hand calculation at that point in time. The engineering memo regarding this work has been attached. The next step is for the District to collaborate with the TRFMA team and the City of Reno to discuss options and jointly evaluate the condition, alternatives. A joint meeting is in the process of being scheduled

The City has received bids for the Virginia Street Bridge project and will take the approval for the bid contract award to the Reno City Council in March. The City plans to present the project to the District at

the next meeting in April once the contract for construction has been awarded. The construction contractor will be issued a notice to proceed only after the USACE 404 Permit has been issued. Currently the schedule for Virginia Street Bridge construction will be for a start of work in 2015 as soon all permits are received by the City of Reno and river flows are manageable. The City of Reno is continuing to working on issues related to the issuance of the USACE 404 Permit for this project. The City will need a letter from the CTWCD authorizing work prior to June if work in the channel is possible due to flow conditions. At a prior meeting the Board delayed acting on this matter until closer to the project start time.

<u>The following section is repeated from prior reports without update:</u>
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- 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. (This work has been delayed due to personnel changes at the City). 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. 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. The model runs will be updated for the sections around the Keystone Avenue Bridge where the water leaves the channel at 14,000cfs and re-run to see if the model updates solve this issue or if other measures will be required. 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. Director Penrose and Tri Sage will plan a meeting with the USACE to discuss the inspection report and associated issues.

RECOMMENDATION

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