NEVADA 2018 INFRASTRUCTURE REPORT CARD

STORMWATER

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EXECUTIVE SUMMARY

Nevada can experience severe flash flooding as a result of rapid snow melt or short duration, high-intensity thunderstorms, both of which can result in significant stormwater runoff problems for its residents. To effectively manage stormwater and associated infrastructure, southern and northern Nevada have established cross-jurisdictional facilitating organizations. The Clark County Regional Flood Control District (CCRFCD) and the Truckee River Flood Management Authority both have comprehensive plans to address flooding issues, regulate land use in flood hazard areas, and fund and coordinate the construction of flood control facilities. The CCRFCD has a $868 million, 10-year construction program which is primarily funded by quarter-cent sales tax and bonds. In Northern Nevada, the $400 million Truckee River Flood Project includes levees, floodwalls, terracing, bridge replacement, mitigation measures. However, statewide, there continues to be projected funding shortfalls upwards of $400 million during the next 10 years for necessary flood mitigation projects.

INTRODUCTION

Nevada is well known for its desert climate, however its name is derived from the Spanish term "snow covered mountains" which suggests a contradiction. Nevada generally has a relatively low average yearly rainfall rate of approximately 7 to 10 inches but can experience severe flash flooding from rapid snow melt or short duration, high intensity thunderstorms, both of which can result in significant stormwater runoff problems for its residents.

Stormwater runoff represents the portion of a precipitation event that does not infiltrate into the ground and drains overland to creeks, rivers, and streams. Stormwater infrastructure includes storm drains, culverts, and detention/retention basins that attempt to safely convey runoff through urban areas and under roadways.

Nevada's residents primarily reside (with 94.2%) in the urban areas of the Clark County (Las Vegas, Henderson, and Southern Nevada) and Washoe County (Reno, Sparks, and Northwestern Nevada). Understandably, these two areas are also where most of the funding and projects are located to address stormwater problems. Stormwater runoff problems generally exist in urban areas due to higher amounts of runoff from impervious surfaces and development that has occurred close to natural drainage ways. Stormwater runoff problems for Northern Nevada include agricultural irrigation ditches and development in closed basins. Irrigation ditches are problematic when, in non-irrigation periods, the empty ditches fill with stormwater runoff and are overtopped and damaged when the amount of runoff exceeds the ditch carrying capacity. Closed basins are problematic when periods of high precipitation result in runoff accumulating in the basin threatens development near the bottom of the basin. In these locations, runoff can only leave the basin through infiltration and evaporation which are much slower processes than overland conveyance.

Cities and counties are often the primary facilitators of stormwater management. In addition to cities and counties throughout the state, the most active managers of stormwater management are the Clark County Regional Flood Control District (CCRFCD) in southern Nevada, the Truckee River Flood Management Authority (TRFMA) in northern Nevada, and the Nevada Department of Transportation (NDOT). The CCRFCD was created in 1985 to develop a coordinated and comprehensive Master Plan to solve flooding problems, regulate land use in flood hazard areas, fund and coordinate the construction of flood control facilities, and to develop and contribute to the funding of a maintenance program for Master Plan flood control facilities. Similarly, in Northern Nevada, the TRFMA creation began in 1998, in part, to plan and design projects that help reduce the impact of flooding on the Truckee River. The Truckee River floods roughly every decade and these floods can come at tremendous costs to the community (i.e. in 1997 there was well over $1 billion worth of flooding damages from that event alone).

CONDITION & CAPACITY

Stormwater infrastructure condition and capacity is tracked by each agency and is generally managed through the development of asset management plans. These plans are typically updated on a recurring basis and used to identify stormwater infrastructure needs. Generally, funding is the limiting factor for agencies to be able to fully address their stormwater issues and significantly improve the condition and capacity of their stormwater infrastructure.

O&M, FUNDING & FUTURE NEED

The Clark County Regional Flood Control District operates a capital program and implements a Regional Master Plan that has now funded over $1.83 billion in projects with local contributions and has funded $2.1 billion when Federal contributions are added. The CCRFCD has 10-year construction program for 2018 to 2027 which is primarily funded by a quarter-cent sales tax revenue and bonds. CCRFCD's resources for this 10-year construction program is estimated as $868 million. Since its creation, the CCRFCD has completed 617 miles of conveyance facilities and 93 detention basins in Clark County.

The TRFMA currently receives a 1/8-cent infrastructure sales tax for the financing of a regional emergency dispatch facility, a public safety training facility, and the Truckee River Flood Project. The nearly $400 million Truckee River Flood Project includes levees, floodwalls, terracing, bridge replacement, mitigation measures, and more and is considered the largest public works project ever undertaken in Northern Nevada. Funding will also include an authorized Federal cost share and a fee to be paid by properties receiving direct benefit from the project. Additional funding was sought through a 2018 Washoe County ballot initiative which would have allowed completion of the whole project in a 25-year window. However, the ballot initiative did not pass.

The City of Sparks is an example of an urban Nevada community who has adopted both a storm drain and river flood control fee which is collected on residents' sewer bill. The storm drain fee is primarily used to maintain storm drainage infrastructure while the river flood control fee was implemented to facilitate the construction of the North Truckee Drain, which is expected to be completed in 2018.

It is also important to note that Nevada's rural communities have their own capital improvement plans to maintain or improve their flood control systems. As an example, the town of Pahrump, initiated a $315 million program in 2008 to construct flood channels, detention basins and dams. Statewide, there continues to be projected funding shortfalls upwards of $400 million during the next 10 years.

PUBLIC SAFETY & RESILIENCE

In Nevada, effective management of stormwater runoff is critical to improving public safety and community resilience. The flash flooding and rapid snowmelt threats in Nevada have consistently threatened public safety and challenged the resilience of affected communities. Water quality is also a challenge for Nevada. Generally, water quality issues are limited to sediment mobilization in erosion prone areas, surface contaminants in urban areas, and fertilizer in agricultural areas. Nevada has made significant improvements over the last several decades to improve stormwater management, however further steps are needed. In the last couple years, NDOT has significantly improved their stormwater management program by creating an entire new division to protect Nevada's waters and address concerns by the Nevada Division of Environmental Protection (NDEP).

INNOVATION

Infiltration basins are becoming more common and attempt to more effectively use the first flush of storm events to recharge aquifers and improve surface water quality. The NDEP is responsible for conducting monitoring, assessment, reporting, and Total Maximum Daily Load development for the State of Nevada. These improvements and other water quality measures are attempting to protect Nevada's 303(d) listed waters from further impact associated with stormwater runoff contaminants. 303(d) listed waters are impaired waters listed by the NDEP.

RECOMMENDATIONS TO RAISE THE GRADE

- Identify, plan, and rally support for additional funding for infrastructure to address areas significantly impacted by stormwater runoff.
- Fund and build the Truckee River Flood Control Project.
- Work with communities to minimize development in identified flood hazard zones and at-risk areas.
- Continue to identify projects that can improve surface water quality and recharge groundwater aquifers.
- Address problems with irrigation ditches that convey stormwater runoff during the non-irrigation calendar months.
- Address problems with development and increased runoff in closed basin systems where infiltration and evaporation are the only methods of stormwater runoff removal.
- Incorporate historical maximum flood inundation maps into emergency management plans and encourage insurance companies and jurisdictions to understand and utilize these maps. (This becomes especially critical as communities expand and develop into areas that previously may have been avoided due to hazard risks such as flooding.)