



WASHOE COUNTY

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|-------------|-------------------|
| CM/ACM | <u> </u> ✓ |
| Finance | <u>DN</u> ✓ |
| DA | <u> </u> ✓ |
| Risk Mgt. | <u>RB</u> |
| HR | <u>N/A</u> |
| Comptroller | <u>MS</u> |

STAFF REPORT BOARD MEETING DATE: October 27, 2015

DATE: October 13, 2015

TO: Board of County Commissioners

FROM: Dave Solaro, Architect, P.E., Acting Director,
Community Services Department, 328-3624, dsolaro@washoecounty.us

THROUGH: Kevin Schiller, Assistant County Manager

SUBJECT: Policy overview and discussion on Washoe County's response to flash flood events in the unincorporated portions of Washoe County. (All Commission Districts.)

SUMMARY

Recent storm events and requests from Commissioners and citizens at Washoe County Board meetings have necessitated a review and discussion of policies and procedures for Washoe County staff response to flash flood events in the unincorporated areas of Washoe County.

Most recently, beginning with a severe thunderstorm June 29, 2015, and ending July 8, 2015, areas of Washoe County including Silver Knolls, East Prater Way, Mogul, Pleasant Valley, Sun Valley, Gerlach, and Lemmon Valley experienced high intensity storm events in which significant quantities of localized precipitation resulted in area flash flood events. Fortunately, no citizens were hurt nor were there any reports of structural damage to homes. The flash floods did result in stormwater flows and sediment transportation that exceeded the design capabilities of the stormwater conveyance systems ultimately resulting in significant water flowing across areas seeking larger natural drainages. During this process, several Washoe County residents experienced flows across their properties, which damaged landscaping, eroded the surface of gravel driveways, exposed fencepost footings and in some cases impacted interiors of homes resulting in the loss of carpet, drywall, etc.

In response to the flashflood events, Washoe County Community Services Department (CSD) staff mobilized to clean the significant amounts of sediment and debris deposited in the stormwater conveyance system that is the responsibility of Washoe County as described on the recorded subdivision maps. This is a typical action and part of the responsibility of the CSD – Operations Division.

In addition to the ongoing maintenance activities, there have been many phone calls and meetings with concerned citizens who live in the areas impacted by the events. Records

have been kept and indicate that each citizen that called in or e-mailed Washoe County received either a phone call, e-mail, or personal visit by a Washoe County employee.

Staff has responded to this incident by attending site meetings to observe damage caused by the flash floods, conducted property by property surveys, mapped the damage area, and estimated the damage to not only Washoe County infrastructure, but private property as well. This mapping and estimating was utilized by the County Emergency Manager in an effort to compel the State of Nevada to provide assistance to our citizens. The attached report from Aaron Kenneston, Emergency Manager outlines the work conducted and outcome of that work.

To help clear up some general misunderstandings, Washoe County's stormwater conveyance systems are not designed and constructed for all possible flood events including high intensity storm events like were experienced in June/July 2015. In general, Washoe County's stormwater conveyance systems are designed and constructed to convey the regular and persistent stormwater flows from small events and also convey snowmelt. This is the approach many municipalities use when developing standards and codes for the design and construction of stormwater infrastructure. Design standards are regulated within Washoe County Code Chapter 110-Development Code.

Staff recognizes the impacts that high intensity storm events have on both private properties and Washoe County infrastructure and is committed to enforcing the existing design standards and codes to ensure the health and safety of our citizens. Staff also recognizes the opportunity to help educate citizens to the possible effects of flash flooding, how to prepare for these events, how to manage flood risk, and how to make sure that modifications to private property do not negatively affect adjacent and downstream neighbors. To help with this effort, staff has developed educational information regarding flash flooding, which provides citizens with information and tools to help prepare for flood events. This educational material helps citizens understand their responsibility in the preparation of private properties and onsite drainage systems, and outlines the responsibility of Washoe County. The information is available at https://www.washoecounty.us/csd/engineering_capitalprojects/stormwater_drainage_flashfloods.php

Washoe County Strategic Objective supported by this item: Stewardship of Our Community.

PREVIOUS ACTION

September 24, 2013, the Board of County Commissioners acknowledged receipt of a status report regarding Washoe County's response to flash flooding events in the Spanish Springs and North Valley's area.

BACKGROUND

On June 29, 2015, a storm event affected Silver Knolls and unincorporated Washoe County at the end of East Prater Way; July 6th, areas of Sun Valley, Lemmon Valley, Mogul, Gerlach, Pleasant Valley; and on July 8th areas of Gerlach and Empire

experienced high intensity storm events in which significant quantities of localized precipitation resulted in flash floods. In some of these areas, the flash flooding washed out residential landscaping, affected driveways, and eroded natural drainage channels on private properties. The flash floods also affected County maintained stormwater ditches and culvert pipes, eroded the sides of roadways and in some areas exposed underground utilities. The National Weather Service issued multiple flash flood warnings during this period.

As the storms were occurring, Washoe County CSD-Operations road crews were on site helping to clear debris from the ditches and drainage inlets. In some cases, crews were assisting residents in helping to direct water from their properties by building berms and digging out ditches. CSD engineering staff was also in the area observing the events to determine whether future activities could assist in mitigating flash flooding. CSD-Operations roads supervisors deployed crews of various sizes depending on the severity of each event to begin clean-up operations. Crews were composed of roads, and sewer operations staff. In addition, significant numbers of equipment including backhoes, tractor trucks, graders, loaders, and dump trucks were deployed to remove sediment and debris. To date, staff has performed maintenance and rehabilitation of the Washoe County stormwater channels and culverts.

Soil and debris which was eroded from upper areas was left deposited on driveways, yards and in some cases, within garages and clogged roadside ditches and storm drain pipes. Fortunately, there were no reports of residents hurt or injured as a result of the flash flooding and there were also no reports of structural damage to homes. Staff received many calls from residents who indicated their property had either been flooded during the event or were reporting that the culverts and roadside ditches in their area were full of sediment and debris and were concerned anticipating another flash flood. The majority of those people who reported their properties were flooded experienced some level of damage to landscaping either through erosion cutting channels across driveways or yards or the deposition of sediment and debris on their properties.

It is customary for engineering staff to assess areas that have experienced flood events. Immediately after the events, staff visited the impacted areas, met with several groups of individuals, observed the flood pathways and gathered information to assess the impacts of the event. It was observed that with the significant volumes of stormwater generated by the event coupled with the highly erosive nature of the soils in the area the stormwater system was overwhelmed and quickly clogged with sediment and debris.

It should be noted that stormwater conveyance systems are not designed and constructed for all possible flood events including high intensity storm events like those experienced with the recent events. In rural areas where development has already occurred, storm water conveyance ditches and driveway culverts are generally designed to convey flows up to a one-in-five chance storm event and then overflow during larger events. This approach allows stormwater from significant events to sheet flow until it is collected into natural and pre-existing drainages. In urban environments where there is curb and gutter the approach is to allow the road right-of-way to convey stormwater from larger events. The events of July, 2015 are estimated to be in the range of one-in-500 chance events.

Since stormwater conveyance systems are not sized to convey the significant volumes of water that large events generate, it is reasonable to expect localized flooding will occur. With that understanding it is also expected that future events of large magnitude may result in some type of flooding. Each of these large and significant events is unique in terms of rainfall patterns, quantities, and sediment deposition. Compounding these types of events is the condition of ditches and culverts. Washoe County Operations crews routinely clean ditches and culverts, more regularly in areas where historical sediment loading has been problematic, to allow the passage of normal storm water volumes. Unfortunately, hail, weeds, toys, garbage, and damaged culvert pipe ends all impact the flow of water in different ways and at different times. Maintenance logs show that significant work was performed throughout Washoe County in an effort to clean roadside ditches. In the north area which includes Silver Knolls, Lemmon Valley, and Golden Valley, between July 1, 2014 and July 1, 2015 Washoe County expended \$220,028 for ditch cleaning, pipe cleaning, and weed control efforts. In the rest of the County the same tasks were performed at a cost of \$199,029. The types of soil and conveyance systems in the north area require that our crews spend a considerable amount of time and effort each year cleaning roadside ditches and culverts. A recent tour of the affected area in which the rights of way roadside ditches were extensively cleaned after the events shows that minor rains in the past month have again started to silt in areas of the roadside ditches. Additionally there were many instances where tumbleweeds, bags, and trash cans were in the ditches. This work is an ongoing work task for the Operations crews, and it is requested that the citizens throughout Washoe County assist by removing objects blown into the ditches when they see them. If citizens need assistance they can also contact the CSD-Operations division to report trouble areas.

If all stormwater conveyance systems were sized for any possible event, residential stormwater conveyance systems would be significantly larger than required under current Washoe County development codes. Ditches would be significantly wider and deeper requiring more land; culverts and pipes would be much larger creating storm water conveyance systems that would be very costly to construct and maintain. The design standards are created to accomplish two things: 1) convey the majority of the probable storm water events; and 2) allow reasonable cost for construction and long-term maintenance. Stricter standards may lead to less development, higher maintenance costs, and in the long term it is quite possible that the results are the same due to the unique nature of these types of events discussed earlier. This approach to standards is not unique to Washoe County, Cities and Counties across the country rely on standards developed for their community that allows for a realistic and sustainable development of infrastructure.

Staff is frequently asked questions by residents regarding why Washoe County does maintain certain drainage ways while not maintaining others. This is a complicated answer in many cases due to the varying types of development that has occurred in Washoe County over the past 150 year period. In many developments that have drainage easements running along the side or back of the parcels it is the property owners' responsibility to maintain those drainage ways. If a property owner does not maintain those ditches and flooding occurs, the impacted resident nearly always looks to Washoe County for remedy, since we maintain the ditches in the County's right-of-way.

Washoe County staff continues to study the impacts of these events in an effort to determine the applicability of our design standards and maintenance practices. We are committed to the continual improvement of our facilities to provide the most reasonable and cost effective protection for our citizens. It is unfortunate that these events happen, and the randomness of their impact is difficult to explain to those citizens that are impacted, but staff is committed to assisting our residents prepare for living in the high desert environment.

FISCAL IMPACT

The fiscal impact from the recent flash flood events has not been quantified, however it can be noted that CSD-Operations roads field personnel and significant equipment resources were deployed in the months following the storm events.

RECOMMENDATION

It is recommended that the Board of County Commissioners acknowledge the policy overview and discussion on Washoe County's response to flash flood events in the unincorporated portions of Washoe County.

POSSIBLE MOTION

Should the Board agree with the recommendation, a possible motion would be: "Move to acknowledge the policy overview and discussion on Washoe County's response to flash flood events in the unincorporated portions of Washoe County."

WASHOE COUNTY

EMERGENCY MANAGEMENT AND HOMELAND SECURITY PROGRAM



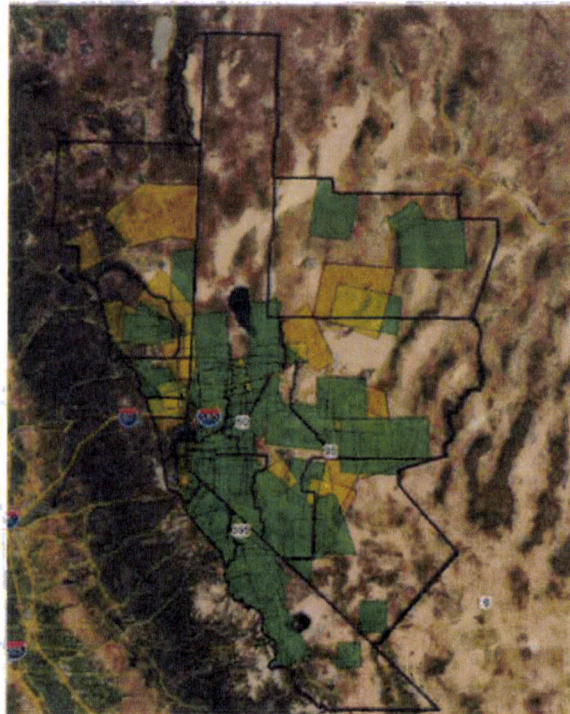
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July 17, 2015

Subject: July 2-9, 2015 Flash Flooding Report

1. The Reno Office of the National Weather Service described the conditions of July 2-9, 2015 as a deep southerly flow that brought an increase in moisture to the Sierra and northwest Nevada during the early part of July, which along with the very hot temperatures was able to generate daily afternoon thunderstorms. As an area of low pressure approached the California coast, storms were able to get even stronger July 6-9, and worked with the existing moisture and afternoon heating to produce very heavy raining thunderstorms each afternoon and evening. Precipitation totals over the week long period across the region ranged from a couple tenths of an inch upwards to several inches of rain. The weather service issued 2-3 times the normal number of Flash Flood Warnings during this period.

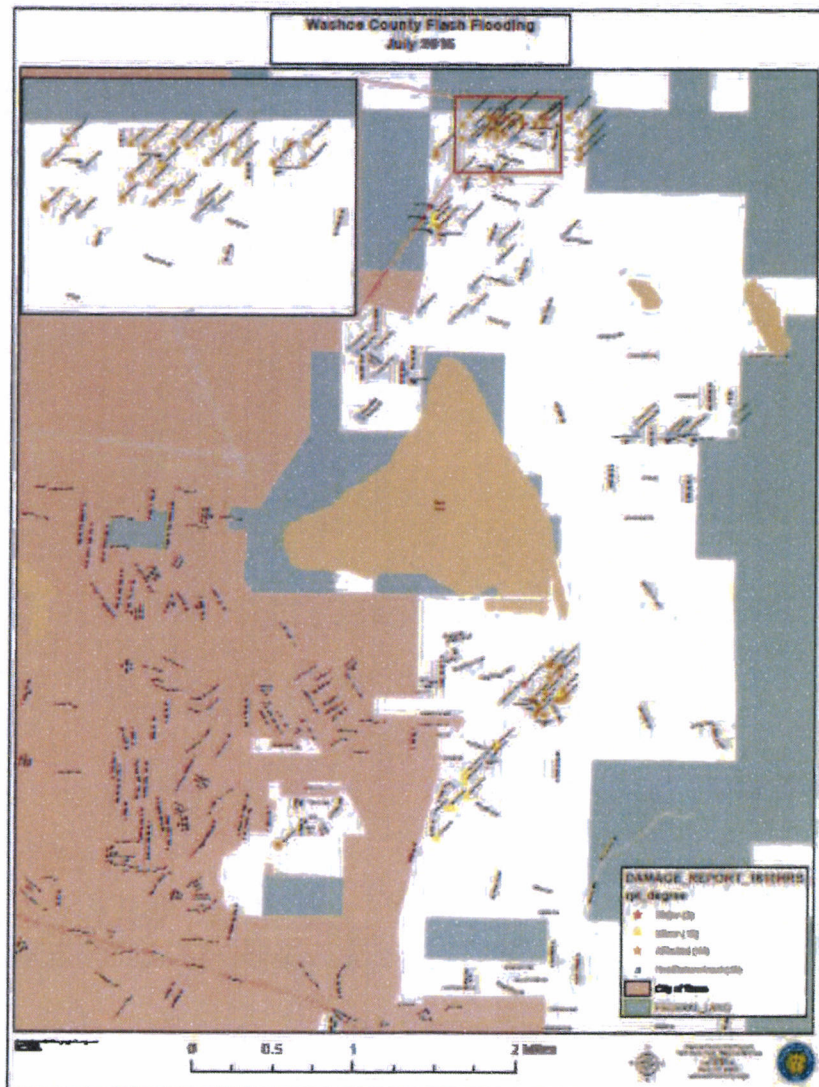


Weather Service map showing 22 severe thunderstorms, 44 flash flood warnings, 11 flood advisories, and one dust warning (original on file at WCEM& HSP).

2. Immediately before, during, and after this series of storms the Community Service Department (CSD) road crews and engineering staff were working extended hours throughout the County to mitigate and respond to flood hazards. Actions included cleaning ditches and storm drains, establishing sandbag distribution points for residents, and responding to drain and ditch clean-up calls.

3. Initial flooding reports and observations came from Lemmon Valley, Silver Knolls, Spanish Springs, Chula Vista Drive, Pleasant Valley, and Washoe Valley. Records indicate that the County received calls from 49 citizens to report flood damage. The majority of the calls were from the Lemmon Valley area. CSD Staff and Community Emergency Response Team (CERT) volunteers returned citizen calls through Friday, July 10, 2015.

4. Crews from the County CSD began documenting damage immediately and continued through the end of the storm series on July 9, 2015. On Friday, July 10, 2015 a Washoe County Team trained in damage assessment conducted Preliminary Damage Assessment (PDA) for the purpose of determining whether local citizens could obtain any relief from State authorities.



Results of local PDA Team in Lemmon Valley 109 potentially affected residences identified (original on file at WCEM& HSP).

5. Based on the potential of 109 affected structures, and a belief that at least two homes sustained major damage, Washoe County requested a State PDA team to validate findings and determine if thresholds had been met for citizen relief from State disaster programs. The State agreed to send a team on Monday, July 13, 2015. The State PDA team was asked to validate two items. First, whether our citizens could be eligible for State or FEMA individual assistance (IA); and second, whether the County would be eligible for public assistance (PA) to assist with costs to repair infrastructure.



Map showing Washoe County infrastructure damage to ditches and drains- approximately 121,018 linear feet of damage (original on file at WCEM& HSP).

6. On Monday, July 13, 2015 the State PDA Team (from the Department of Public Safety, Division of Emergency Management) was escorted through the damage area and determined that there indeed were approximately 109 residences affected by the storm. The team classified residences into 4 categories- affected, minor, moderate, and major. Their final assessment was that most homes were “affected” with landscaping damage, a few were “minor” with flooding into the garage, and 2 or 3 could be classified as “moderate” (perhaps borderline “major”) because water had breached into living spaces. Based upon this assessment, the State determined that our citizens would not be eligible for a State or FEMA disaster declaration for IA. The criterion is approximately 178 structures with “major” damage (uninhabitable). The County and the State decided to seek a Small Business Administration (SBA) emergency declaration because their criterion is more lenient. The SBA can issue a disaster declaration if a combination of 25 homes and/or businesses are damaged. The SBA PDA Team was requested to assess damage and make a determination as to IA eligibility.

7. On Wednesday, July 15, 2015 Washoe County and State PDA Team members validated approximately \$1.2M in PA flood damages for the County. This number includes costs to repair drainage ditches and storm water pipes, costs captured for CSD workers overtime for immediate response, response equipment costs, and some damaged electronic equipment identified by Technology Services. These costs are being captured in statistical order IO 70523. It is expected that this number will not be solidified until at least the end of July 2015 as departments continue to validate and enter flood-related costs into the County SAP computer system.

8. The State Department of Public Safety, Division of Emergency Management (NDEM) had proposed to combine costs between the 6 urban Northern Nevada Counties (Washoe, Douglas, Lyon, Storey, Churchill, and Carson City) to obtain either FEMA or SBA assistance. In the interest of Washoe County citizens and the Northern Nevada region (especially hard-hit Douglas County), Washoe County had agreed to explore the possibility of an emergency declaration and “pooling damage” to meet a regional threshold for a State or Federal emergency declaration. Unfortunately, NDEM was informed by federal authorities that each County would need to meet their individual threshold in order to qualify to “pool damage” for a regional declaration. The Washoe County PA damage threshold for a State or Federal declaration is \$1.5M. Thus, the County did not meet the criteria.

9. However, also on Wednesday, July 15, 2015 the Washoe County School District announced that they had sustained approximately \$400,000 in damage to schools located in Sparks, NV. This amount would place Washoe County above the \$1.5M PA threshold. Conversations with senior staff of both the School District and Washoe County indicated neither organization was convinced that an emergency declaration for public assistance was appropriate in this instance. This was because the costs appeared to barely meet the threshold, and the State/Federal rules require an auditing of government accounts to prove that a jurisdiction does not have any funds in reserve to cover emergency expenses. In this case, the benefits did not appear to outweigh the political costs of declaring an emergency for PA purposes.

10. The County leadership did continue due diligence to obtain a State or SBA disaster declaration for IA to bring relief to citizens with affected residences. On Thursday, July 16, 2015 the SBA PDA Team was escorted through the affected area by Washoe County and State representatives. After assessing the damage area, the team stated frankly that Washoe County did not have a single residence or business that met SBA criteria as “major.”

11. Thus, Washoe County does not meet the SBA threshold for individual assistance and is not eligible to even “pool” damage figures with other counties to help the region. The SBA preliminary report language reads:

“On July 7, 2015 severe storms produced 6 inches, or more, of rain in less than one hour causing flash flooding throughout southern Washoe County. Local officials reported the heavy rainfall overwhelmed many storm water drainage ditches creating flooding of residences and businesses in throughout the unincorporated area of Lemmon Valley in Washoe County.

At the request of the State of Nevada Governor Brian Sandoval, the U. S. Small Business Administration (SBA) along with state, county and local officials participated in a preliminary damage assessment survey on July 16, 2015. The majority of damages observed by the survey team were located throughout the county of Washoe. Damages resulted from a few inches to one foot of water in some crawl spaces, landscaping, driveways and garages.

HOMES:

The damaged homes consisted of single family residences primarily built on crawl space foundations. Damages were to landscaping, garages, and drive ways.

BUSINESSES:

The businesses were three rental homes with damages to the garage, drive ways and landscaping caused by flooding and run off of soil from the hillside.

ECONOMIC INJURY:

The survey team observed that there was no economic damage to any businesses. No damage was observed to manufacturing or agriculture.

LIST OF DAMAGED PROPERTIES:

The state officials provided a list of damaged properties and a map of the area. It was agreed that all of the structures identified as majors had been observed.

FINDINGS:

Washoe County did not meet the damage criteria for an SBA Administrative declaration.”

12. In conclusion, Washoe County followed local, state, and federal response, and damage assessment processes in an attempt to assist citizens. The efforts of CSD, CERT, and GIS mapping personnel were commendable. It is fortunate that flooding was not catastrophic and did not rise to the level of “major” damage. Of course, this is of little comfort to homeowners with water and debris damages. One positive outcome is that any engineering projects to address the ditches and drainages that overtopped during this event will now be listed in the Washoe County Hazard Mitigation plan. This is a condition of eligibility for Federal assistance if the projects are proven to meet FEMA cost-benefit analysis criteria.


Aaron R. Kenneston, CEM
Washoe County Emergency Manager

The attached document was submitted to the **Washoe County Board of Commissioners** during the meeting held on 10-27-15 by Community Services Development ^(Dave Solero) for Agenda Item No. 13 and included here pursuant to NRS 241.020(7) as amended by AB65 of the 2013 Legislative Session.



West side of Heppner subdivision behind 255 and 265 Oregon



- 10-27-15 #13 BCC
ESD





36" Culvert Oregon and Lemmon Valley Drive

