



Swan Lake Update – June 2020

Update to Commission

- **Washoe County's continued response to the 2017 Closed Basin Flood events**

Discussion Item 1

- **Discussion and possible direction regarding possible updates to the Lemmon Valley Closed Hydrobasins FEMA floodplain ***

Discussion Item 2

- **Discussion and possible policy direction to increase volumetric mitigation for new construction within LV Closed Hydrobasins**



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WASHOE COUNTY COMMISSION DIRECTIVES

- Manage Swan Lake within current boundaries
- Prevent water from entering homes and businesses
- Maintain open access for emergency responders

FOCUS AREAS

- **Communications**
- **Maintaining Protections**
- **Lemmon Drive**
- **American Flat**
- **Long Term Mitigation Work, including HMGP Home Purchase**



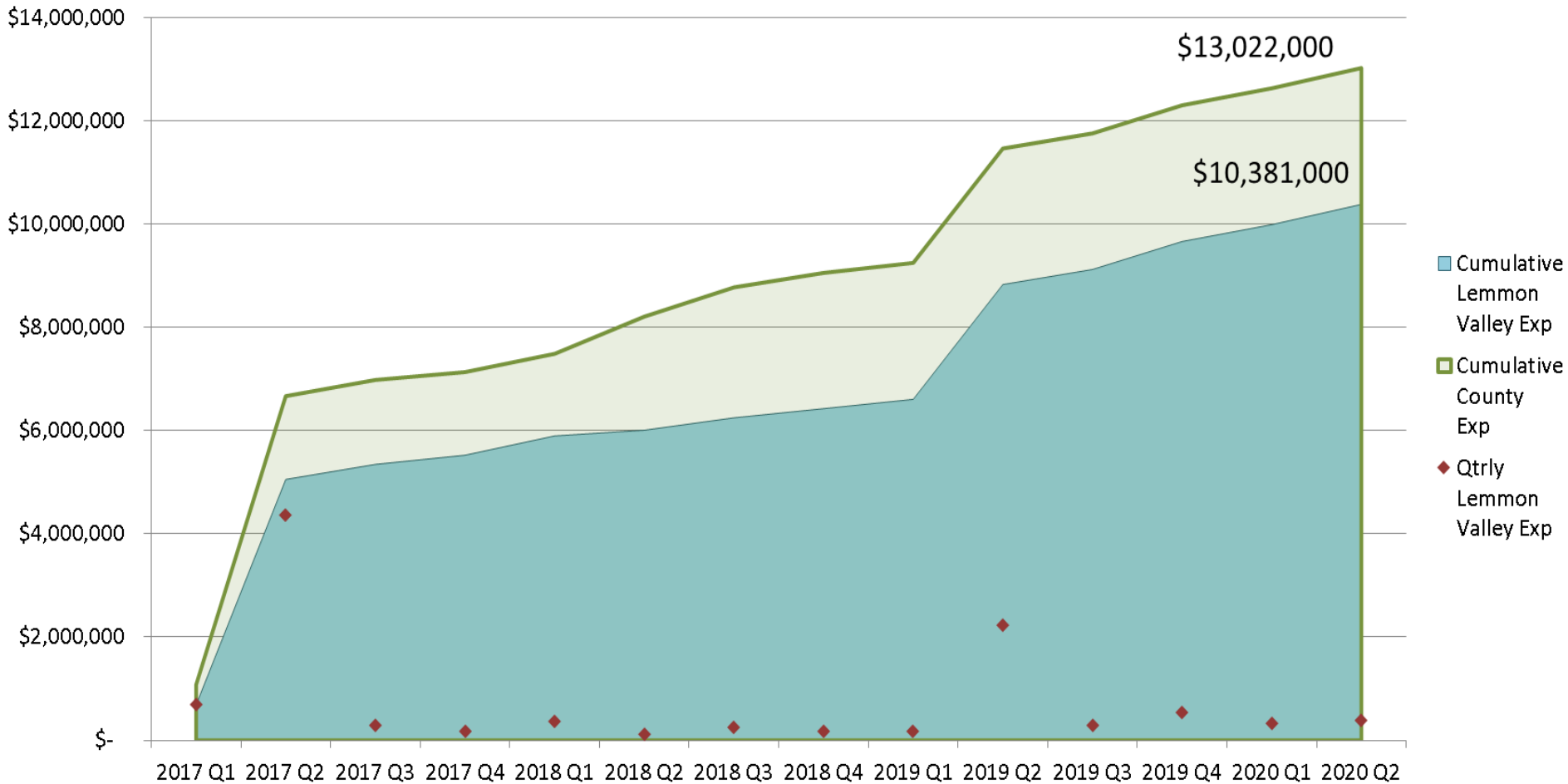
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- **Flood response funding; GF contingency, stabilization and water rights sale proceeds (June 27, 2017 and Sept 12, 2017)**
 - **Total WC flood response**
 - **≈\$13 M**
 - **LV flood response (General Fund and Utilities Fund)**
 - **≈\$10.4M**
 - **Average monthly operation and maintenance - \$≈120K**
- **FY21 approved budget includes operations and maintenance funding within the Managers Office budget**



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Washoe County Flood Expenses - As of May 31st, 2020





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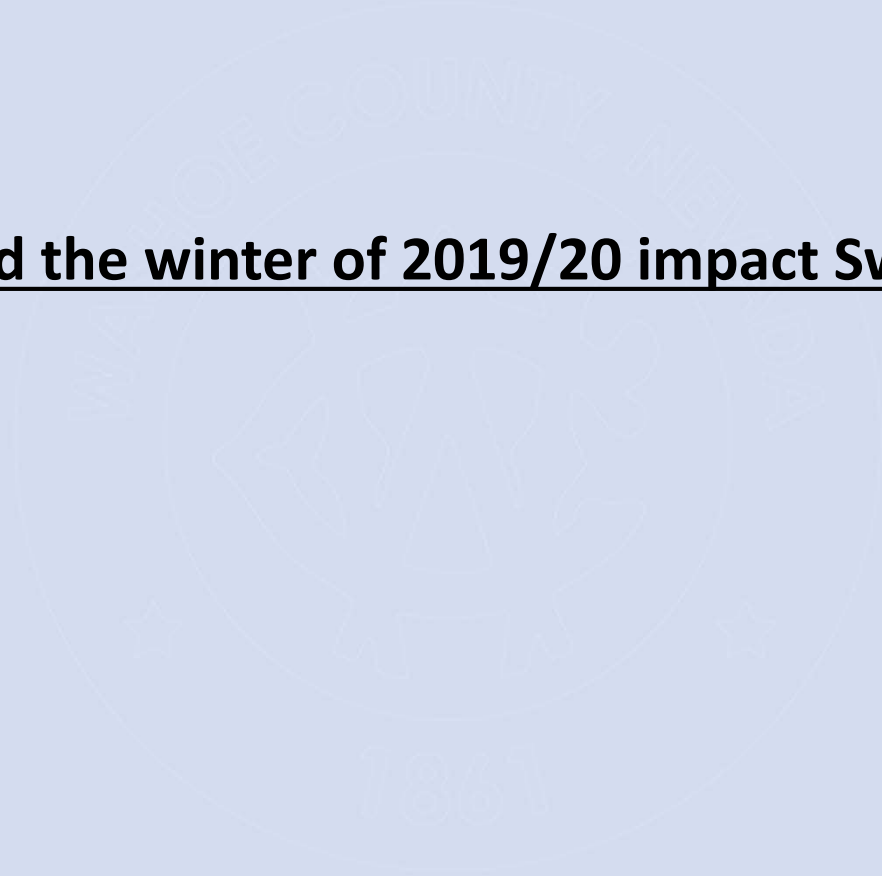
Notable Recent, On-Going and Upcoming Field Activities

- Maintenance of barriers, pumps and piping
- Installation of barrier at Lemmon Valley Elementary School
- Installation of lake cam (web site) https://www.washoecounty.us/lemmon-valley/swan_lake_video.php
- Storyboard updates (web site)
- Reno's American Flat irrigation
- Roadside ditch cleaning
- Weed abatement
- Mosquito abatement (WCHD)
- Repairs to impacted HESCO, as necessary
- Operational changes – County staff in lieu of contractors

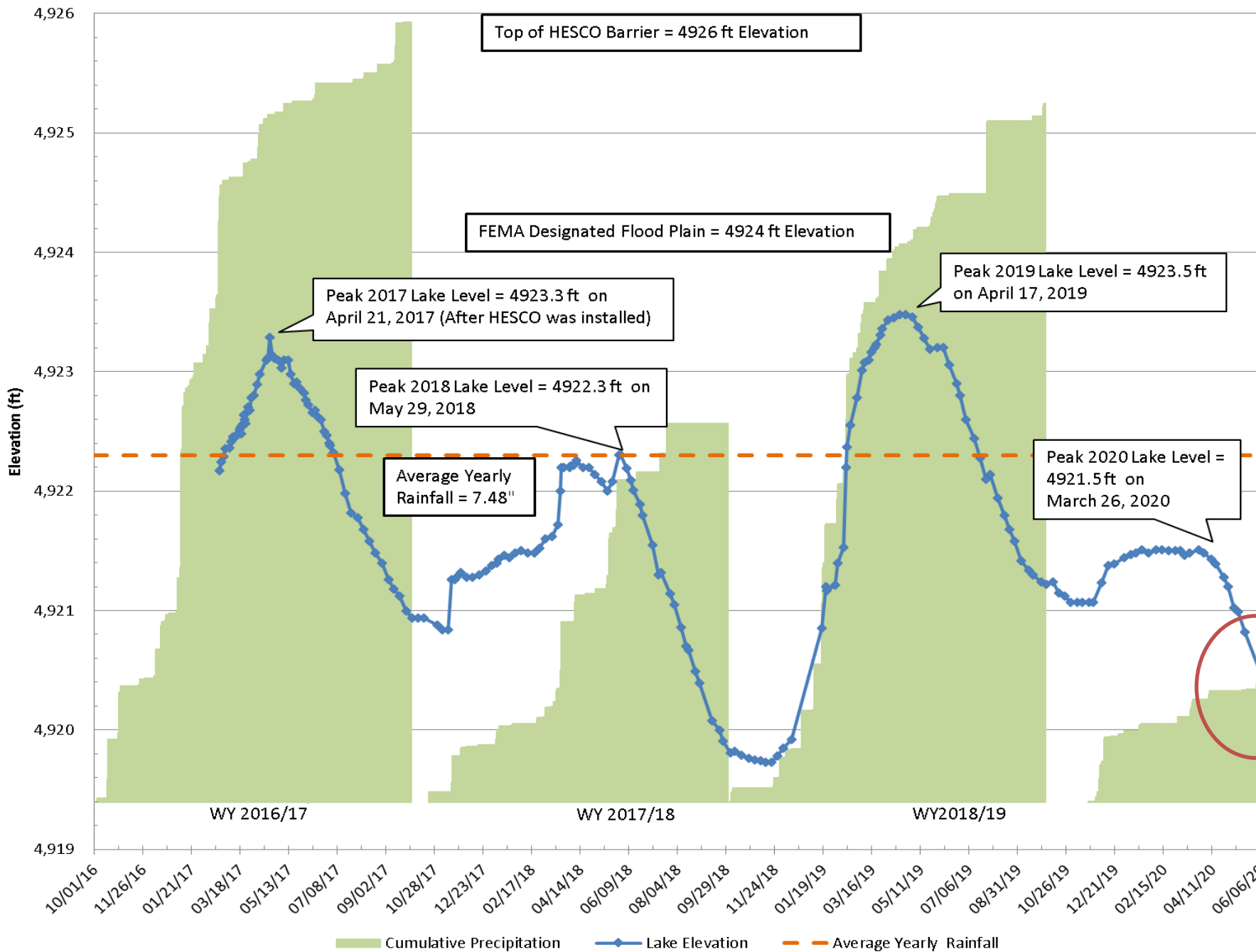


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How did the winter of 2019/20 impact Swan Lake?



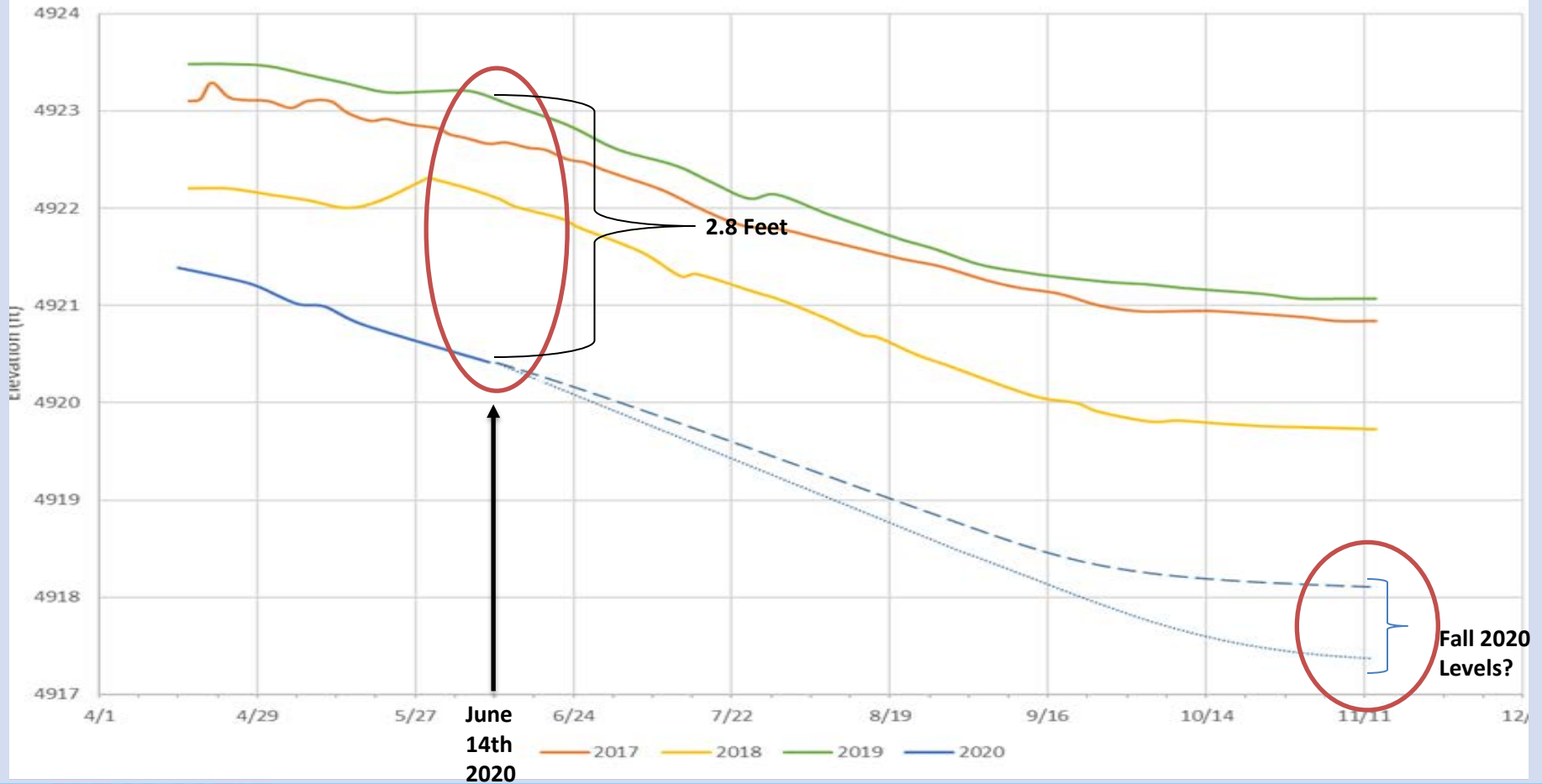
Swan Lake Water Elevations 2017-20





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Swan Lake Water Elevations 2017-20
April 15 - November 15





HESCO Barrier

- In place since March 2017
- Concerns raised by various groups from time to time
- Third-party professional continues periodic evaluation
- Affirms “fit for purpose, well-constructed, performing very well”
- Continue to inspect/maintain

To: Washoe County – Community Services Department
From: Keith Anderson – Flood Defense Group
Date: 13 June 2019
RE: Review of installed HESCO Bastion Barrier Protection Systems

Dear Washoe County

This is a report that summarizes my review of the HESCO Bastion flood defenses around Swan Lake in Washoe County, NV.

Initial Introduction:

Flood Defense Group specializes in the supply, installation, and/or support of temporary flood defense measures throughout North America. As an organization, we represent largest variety of products and solutions within this region and cover the majority of designs regularly deployed within this market space. Our unique expertise lies in the ability to provide objective feedback on a broad variety of products and solutions unique to the needs of the end user or flood event in question. One of our options include the HESCO Bastion line of flood barriers.

Flood Defense Group has not been involved in any aspect of the HESCO Bastion built in Washoe County and I have been called out to review the current material in place based on experience and understanding of the product. I have had significant experience with building HESCO Bastion since 2003 and am currently listed on contract as a technical support responder for flood defense deployments by the USACE with this product which has remained their primary tool for flood defense since around 2014.

Initial Summary:

After reviewing the HESCO Bastion flood barriers installed within Washoe County, it is my belief that these barriers are fit for purpose and can be expected to perform as designed and as floodwaters rise. These barriers appeared to be in good condition and built correctly except for some foot print issues along Lerma Drive. Discussion on reinforcing this section and general repairs are detailed below but none of these issues cause concern for a catastrophic failure.

Below lies a detailed review of the HESCO Bastion flood defenses built within/by Washoe County. This includes aspects from product selection, product design, project construction, product performance, existing problems, corrective actions, general maintenance, and what to expect with regard to life span of this project and how to extend it as required.



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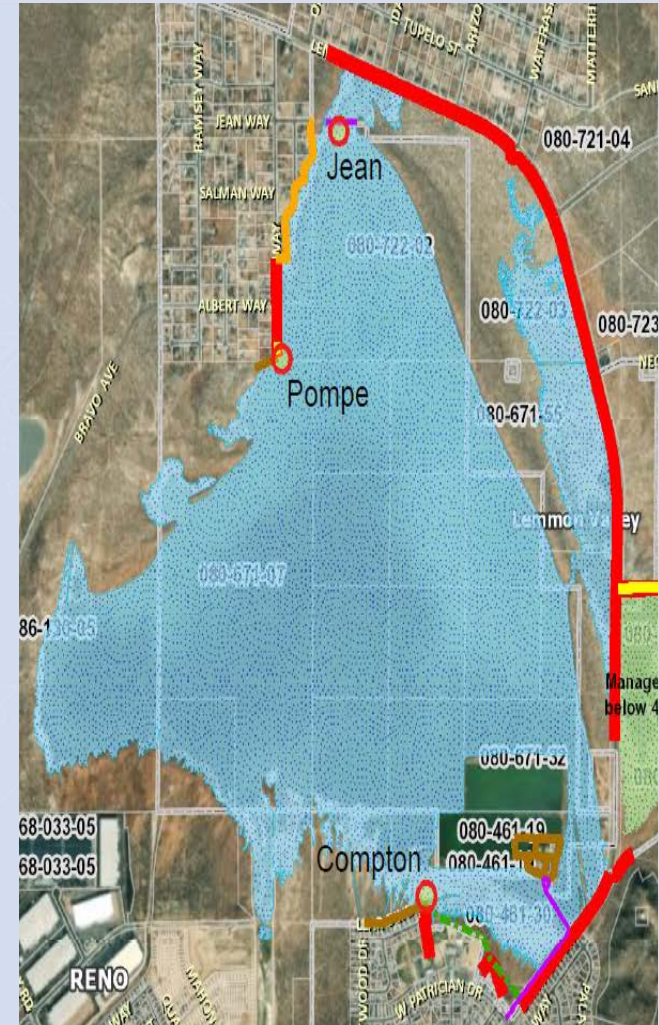
Swan Lake Water Quality Monitoring

- CSD collects monthly samples from Swan Lake and American Flat discharge
- Swan Lake continues to meet and exceed Federal guidelines for recreational water quality standards

Commitment: Should any test data indicate changes, WC will work with the WCHD and State to address

Reminder:

- WC and COR treatment and discharge of treated effluent is within NDEP permit requirements





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City of Reno American Flat Irrigation Project





RTC Lemmon Drive Project - Update

- Regional Transportation Plan (RTP)
- Lemmon Drive Project defined as a capacity project
- Accommodate future growth including complete street improvements

Goals


- G1. Widen Lemmon Drive from 2 lanes to 4 lanes**
- G2. Provide a safe and reliable regional road during 100-year flood event**
- G3. Support the Swan Lake mitigation efforts that significantly reduce or eliminate future maintenance cost for Washoe County and COR.**
- G4. Incorporate safe access for all multi-modal users**
- G5. To aid long-term flood response planning**
- G6. Comply with current engineering design criteria**
- G7. Ensure connectivity of future road-network improvements**
- G8. Deliver a cost appropriate solution**





RTC Lemmon Drive Project - Update

PROJECT LIMITS

Segment 2 





TOP 3 ALTERNATIVES (DRAFT)

- The 3 Alternatives are under consideration from TAC to move forward to Level 2 Screening evaluation are:
 - Alternative 2: Elevate Existing Lemmon Drive
 - Alternative 6: Natural Berm Alignment
 - Alternative 8: Deodar Alignment





RTC Lemmon Drive Project - Update

TOP 3 ALTERNATIVES (DRAFT)



(A2)

(A6)

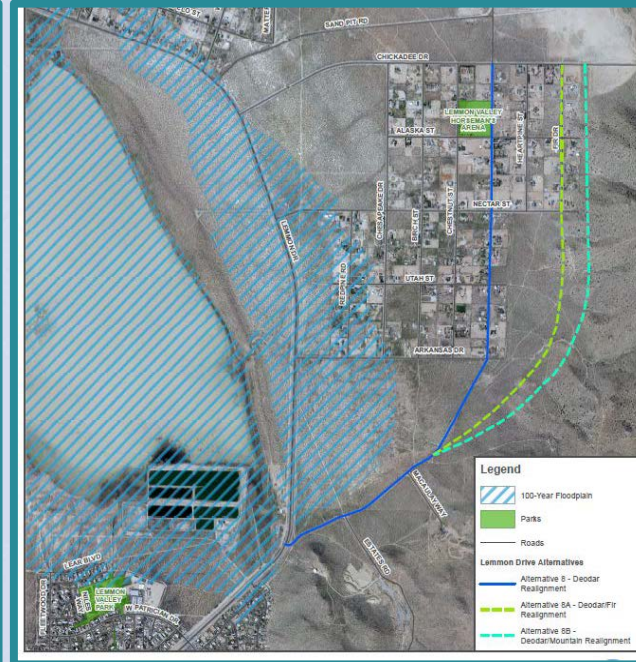
(A8)



- Raise existing Lemmon Drive above 100-year floodplain
- Requires volumetric mitigation and culvert equalization*
- Estimated Cost = \$25.8 M
- Does not imply roadway will act as a berm/levee



- Realign Lemmon Dr to the west along natural berm
- Limits of project extend and local roads will need to be connected
- Estimated Cost = \$45.4 M



- Realign Lemmon Dr to the east along the existing Deodar Way
- Deodar mostly outside floodplain and considers realigning further to the east
- Estimated Cost = \$55.5 M





RTC Lemmon Drive Project - Update

NEXT STEPS

- Stakeholder Outreach: Summer 2020
- Public Workshop: Late Summer 2020
- Level 2 Screening: Fall 2020
- Recommendation of Preferred Alternative: November 2020

RTC Project Manager

Dale Keller, P.E.

DKeller@rtcwashoe.com

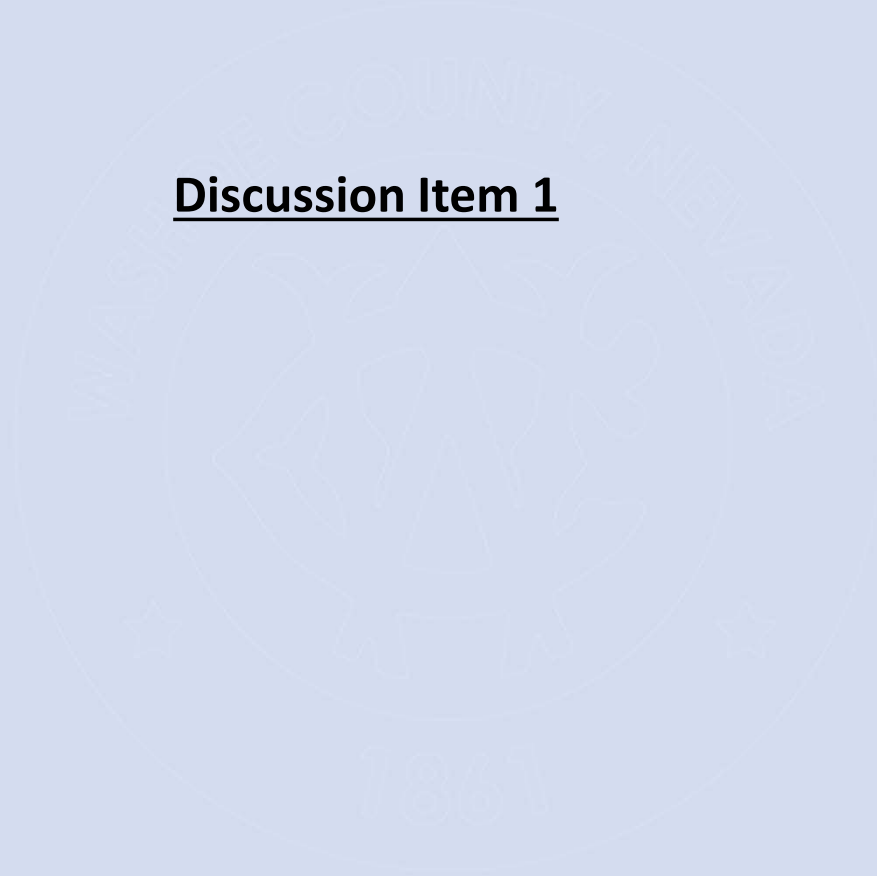
(775) 335-1827





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Discussion Item 1





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FEMA Floodplain – What is it and what does it mean?

- Areas FEMA has defined as having flood risk.

All areas can flood, higher risk areas identified as Zone A, AE, AH

- Most flood insurance administered by FEMA;
 - Through the NFIP Program
 - by an insurer under contract with FEMA.
- If your home is in a higher risk area, you will likely be required to buy flood insurance by your mortgage lender. However, nearly everyone is eligible to buy flood insurance regardless of where the home is located (premiums will vary).



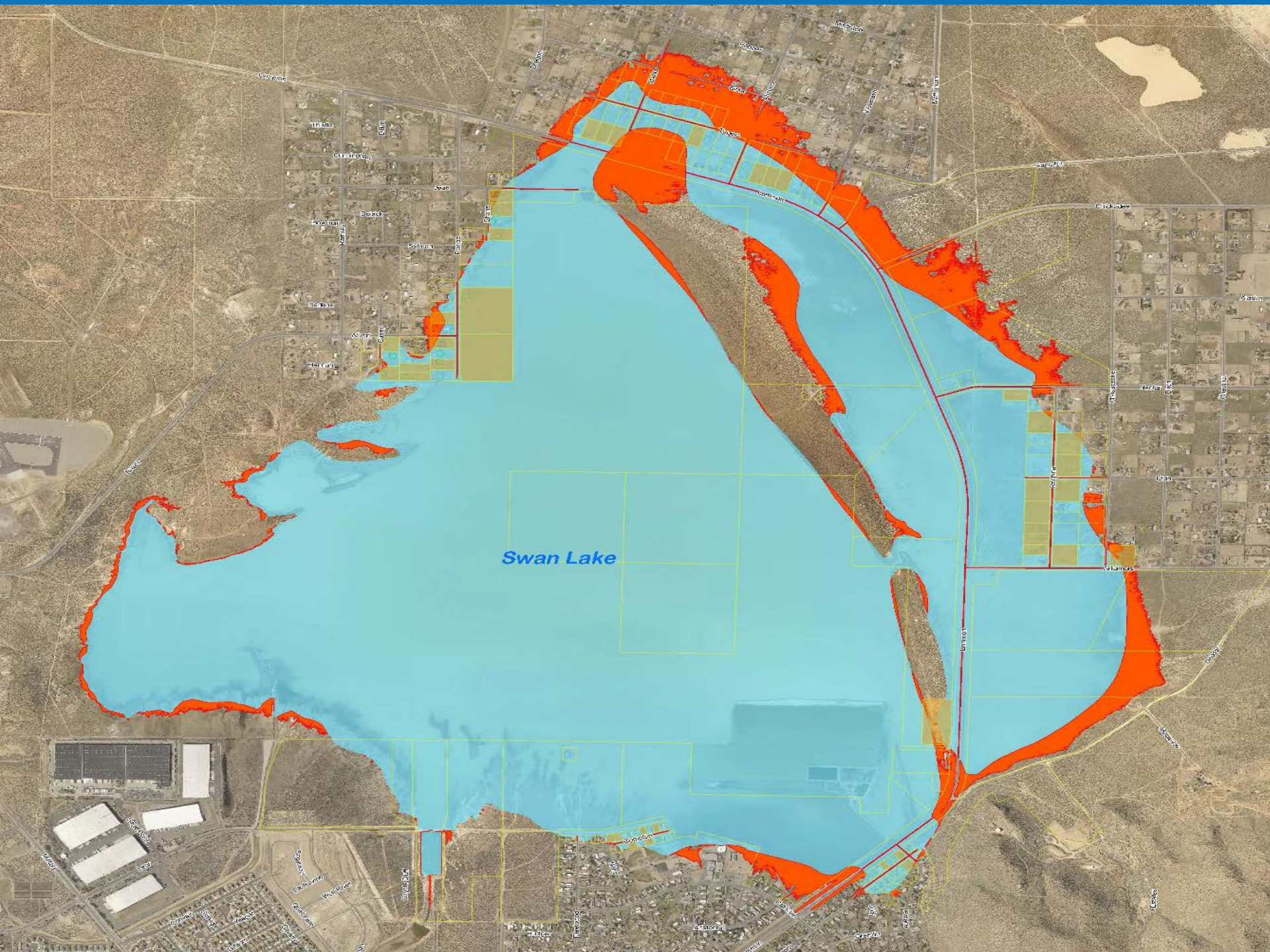
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2017 Presidentially Declared Flood Disaster – 4303, 4307-DR-NV

- 2017 Closed Basin Flooding revealed areas where the flood maps need updating
- “Flood hazard maps must present flood risk information that is correct and up to date to ensure that they provide a sound basis for floodplain management and insurance rating”

Initial Study and Outcome

- Focus on East Lemmon Closed Hydrobasin
- 100-year flood pool is higher in elevation and the overall floodplain area is broader than currently mapped.



Swan Lake



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| CHANGE IN RISK | RATE IMPACT |
|---|--|
| <p>From: Moderate- to low-risk area (Zone B, C, or X) or Unknown (Zone D)</p> <p>To: High-risk area (Zone A or V)</p> | <p>Flood insurance is mandatory in an SFHA. Flood insurance is required if you have a mortgage from a federally regulated or insured lender.</p> <p>Rating options can offer savings. Buildings newly mapped into an SFHA may be eligible for a lower premium during the first 12 months after a map change. Rates will then go up no more than 18 percent each year. Buying a policy before the new flood map goes into effect will save more money. Your insurance agent can give you more information on how to save. If the building is sold, the policy can be transferred to the new owners, allowing them to keep the lower rate.</p> |
| <p>From: High-risk area (Zone A)</p> <p>To: Higher-risk area (Zone V)</p> <p>Or: Increase in BFE</p> | <p>Flood insurance is mandatory. Flood insurance is required if you have a mortgage from a federally regulated or insured lender.</p> <p>Grandfathering can offer savings. The NFIP grandfathering option lets policyholders who have built in compliance with the flood map in effect at the time of construction to use their previous zone to calculate their insurance rate. This could lead to large savings. A policy with a grandfathered rating can be transferred to new owners if the building is sold. In most cases your insurance agent will ask you to provide an Elevation Certificate for use in accurately rating the policy.</p> |
| <p>From: High-risk area (Zone A or V)</p> <p>To: Moderate- to low-risk area (Zone X)</p> | <p>Flood insurance is optional, but recommended. The risk is lower, but there is still risk. More than 20 percent of NFIP claims come from buildings outside of SFHAs. You can save money by updating your policy. An existing policy can be changed to a lower-cost Preferred Risk Policy, and as long as all PRP eligibility requirements are met you will get a refund for the price difference. Although flood insurance is no longer federally required, your mortgage lender can still require it.</p> |
| <p>No change</p> | <p>No change in insurance rates. This is still a good time to talk with your insurance agent to learn your specific risk and make sure you have enough flood insurance coverage, as well as discuss any mitigating steps you can take to reduce your risk.</p> |



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Next Steps:

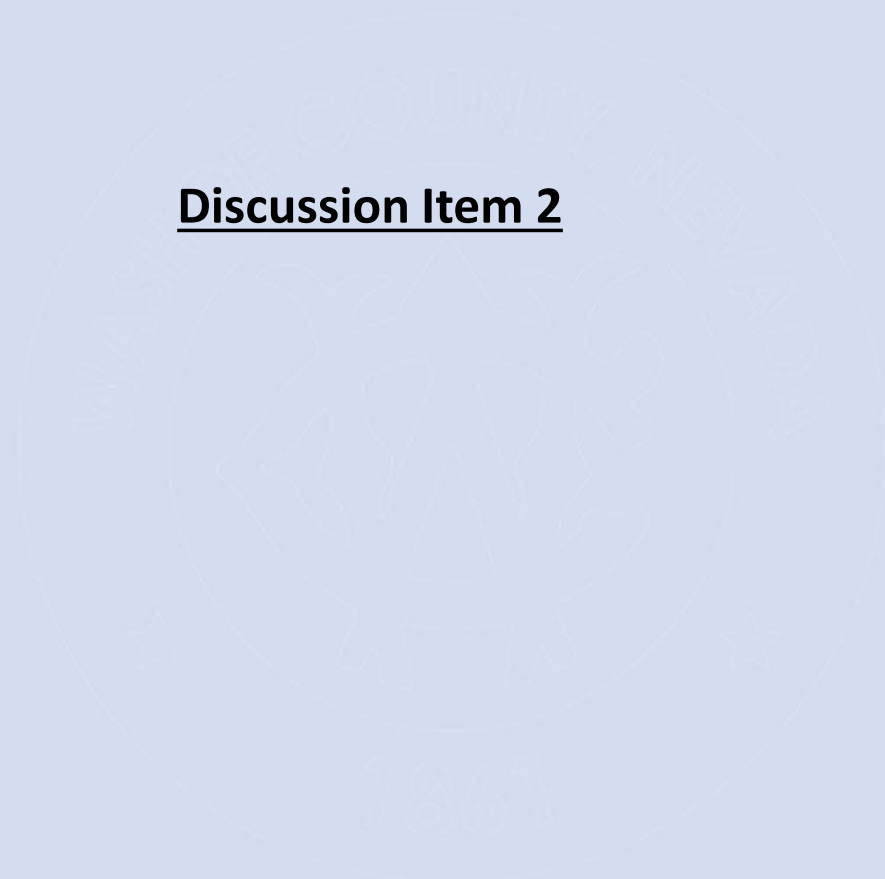
- Finalize 100-year flood plain limits and depth
- Use this data in current projects (Lemmon Dr., long term mitigation)
- Small group meetings with affected residents to discuss process and findings
- Update the FIRM and submit to FEMA for review
- Provide communication for insurance companies regarding grandfathering process and FEMA options

- **Recommendation for direction:**
 - **Provide periodic updates to the Board**
 - **Outcome of small group meetings with residents and other stakeholders**
 - **FEMA's review comments**
 - **State of Nevada Floodplain Administrator**



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Discussion Item 2

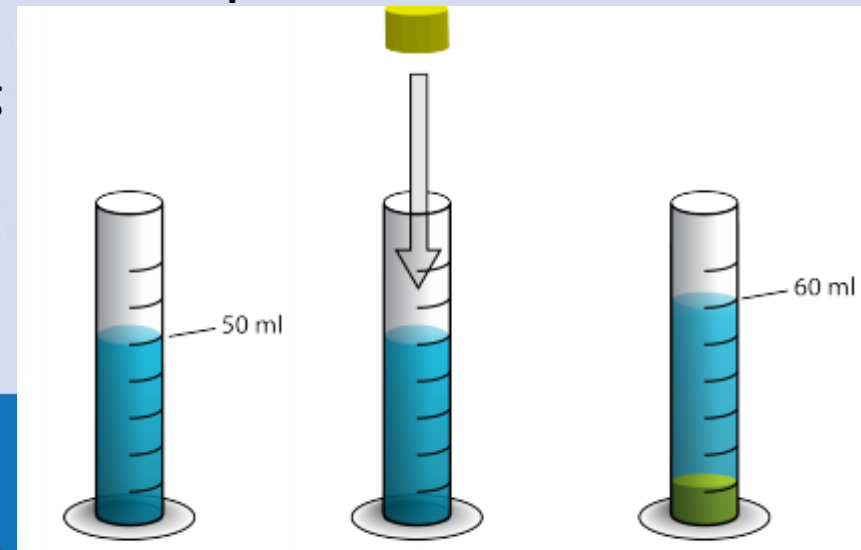




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Volumetric Mitigation within Lemmon Valley Closed Hydrobasin for new projects within FEMA high risk areas (100-year floodplain)

- Currently no mitigation is required if demonstrated a project will not raise base flood elevation (BFE) by more than 1 foot
- Recognize adding material into floodplain has the potential to affect flood elevations.
- In the Truckee River floodplain - FEMA SFHA floodplain (critical zone 1) limits – “1 unit of volume in = 1 unit of volume out” within the same flood storage area as the volume displaced and at the same elevation band as the volume displaced
- Area developers in general support of increasing mitigation actions





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Policy specific to new development within Lemmon Valley closed hydrological basins.

- **“1 unit of volume in = 1.3 units of volume out”** within the same flood storage area as the volume displaced and at the same elevation band as the volume displaced, as determined in conformance by the County Engineer.
- Detention/retention basins required by other ordinances are not eligible to be counted as flood mitigation storage volumes.
- Compensatory flood storage may be, but is not required to be, hydrologically connected to onsite drainage designs required under Article 420, Storm Drainage Standards, of the Development Code, but shall not replace or be used in-place of required stormwater code requirements.
- Policy will apply to all new building projects, including new development, which may have prior tentative map approval but that has not submitted grading permits and/or initiated field grading activities prior to June 16, 2020.
- Policy will be applied until such time as the Washoe County Development Code (Section 416) is revised.



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Today's Summary:

- **Acknowledge continuation of flood response activities**
- **Possible direction to initiate revision of current FEMA Floodplain for East and West Lemmon Valley Closed Hydrobasins**
- **Implement engineering policy for increasing volumetric mitigation of closed basins in Lemmon Valley**

Questions?