NDWR

Fall 2012

Volume 5, Issue 2

Nevada Floodplain Management News

Inside this issue:

National Institute of Building Sciences released its Scientific Resolution Panel (SRP) Decision and Report on July 16, 2012, concerning Douglas County's appeal of its January 20, 2010, Flood Insurance Study. The SRP Decision and Report may be downloaded at: **www.floodsrp.org/panels/**

Every Drought Ends in a Flood

Every drought ends in a flood—this is the theme for the 2013 Association of State Floodplain Managers (ASFPM) Arid Regions Conference in Scottsdale, Arizona next Fall. And in the case of this summer's flash flooding in Clark County, sometimes flooding can occur *during* a drought.

Here at the Division of Water Resources, we are hearing from long-time ranchers and farmers that this year's drought has been the worst in memory. In July the U.S. Department of Agriculture declared drought conditions that are impacting agriculture and ranching throughout the state.

But despite regionally dry conditions, Clark County experienced severe flash flooding this summer with one event that produced the largest single-day precipitation measured for any September on record. Tragically, two fatalities have been confirmed due to recent flash flooding in Southern Nevada and, as of this writing, flood damages to businesses and homes continue to be assessed. Indeed, and at least where weather and climate are concerned, Nevada seems to be the land of extremes.

Clark County Regional Flood Control District's award winning, flood-safety, billboard campaign and other outreach activities provide constant reminders to Southern Nevadans of the importance of flood safety, yet this summer's two tragic flood-related deaths provide sobering reminders that safety can ultimately come down to individual choices made to avoid risk.

Preliminary information indicates that flood damages to homes and businesses in Clark County occurred in locations both inside and outside of mapped Special Flood Hazard Area (SFHA). In at least one instance, a business located outside of a SFHA incurred damages that threatens to close its doors permanently. Because of its location outside of the SFHA flood insurance is not federally mandated by the mortgage lender. Even when the mandatory purchase requirement does apply, contents coverage is not required, unless contents are included in the collateral for a loan, so business tenants or residential renters without flood insurance could lose valuable property during a flood with no immediate recourse for recovery.

In my work I have encountered property owners who feel that flood insurance is unnecessary, even when located within a SFHA, because "the government will bail me out with disaster assistance." But the truth is that federal disaster assistance becomes available only if a presidential disaster declaration is made, and frequently assistance comes in the form a Small Business Administration (SBA) loan—a loan for which one must qualify and which must be repaid. In Nevada, even after the January 1997 Flood disaster declaration, federal assistance came in the form of SBA loans and not FEMA Individual Assistance.

Depending on the circumstances of the insured structure, flood insurance premiums may or may not be easily affordable, particularly in these tough economic times in Nevada. Nevertheless, the cost of flood damages can be financially devastating and even structures located outside SFHAs can incur flood damage. Flood insurance is a way for individuals to take responsibility for their flood risk. We in floodplain management owe it to our fellow Nevadans to help them to make informed decisions about their flood risk.

Kim Davis, PE, CFM
Nevada Floodplain Manager

Southern Nevada Flash Flooding

By Andrew Trelease, Clark County Regional Flood Control District

Tropicana Wash near Harmon Drive —8/22/2012

Although the annual average rainfall is only about 4.5 inches in southern Nevada, floods can and have occurred in every month of the year. However, the most damaging storms typically occur between July and September, the time of the year considered locally to be Flash Flood Season. This summer, Southern Nevada has experienced an extremely active monsoon season, highlighted by significant storm events on August 22, 2012 and September 11, 2012. The National Weather Service (NWS) considers this summer to be one of the wettest in history, which began keeping records of Las Vegas weather in 1937.

Most of the areas where the most flooding damage occurred were in areas where the network has not been completed, reminding us that work still needs to be done to decrease the flood risk to the community

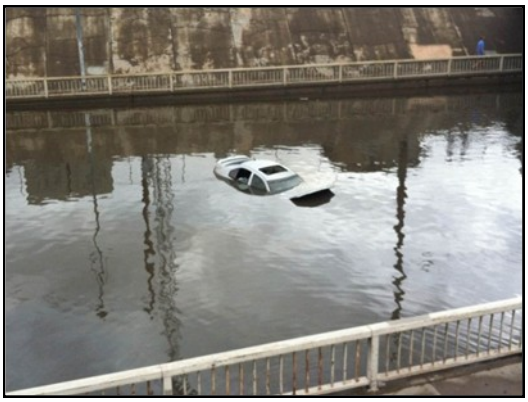
August 22, 2012

In the early morning hours of August 22, 2012, several rain gages operated by the Clark County Regional Flood Control District (District) recorded more than 1.5 inches of rain in the Las Vegas Valley. This widespread rainfall resulted in significant runoff in all of the water courses throughout the Valley. The highest runoff volumes were observed in the southern portion of the Valley, including Henderson. Flow estimates in the lower Duck Creek Wash were near design levels, with over 10,000 cubic feet per second (cfs) estimated upstream of the confluence with the Las Vegas Wash.

The intense rainfall caused numerous instances of flooded roadways and intersections as the runoff made its way to the major flood control channels and storm drains. Several motorists were stranded and needed assistance when their vehicles stalled in the high water. Three homes and several businesses reported flood damage. However, damage to private property was limited, as major flood control facilities operated as designed. There were additional reports of damage to landscaping and parked cars.

Airport Channel at Tropicana Avenue—8/22/2012

One death was reported as a result of this event when a young man fell into the Pittman Wash and was swept downstream. This tragic accident illustrates how important it is to avoid flooded areas during storm events.



Charleston Underpass—9/11/2012.

September 11, 2012

On September 11, 2012, widespread heavy rain moved though Clark County for the second time in less than 3 weeks. Seventeen rain gages operated and maintained by the District recorded rainfall amounts greater than one inch, most of which fell in less than two hours. The hardest hit areas of the Valley were downtown Las Vegas, the area around the UNLV campus, and residential subdivisions on the east side near the confluence of the Las Vegas and Flamingo Washes. Flooding downtown caused roadway closures and stranded motorists. Approximately 20 properties were damaged in and around the UNLV campus, and several students were seen playing in flooded parking lots shortly after the storm. There was extensive

. . . continued on page 3

REGIONAL FLOOD CONTROL DISTRICT

Southern Nevada Flash Flooding, continued

Las Vegas Wash (under construction)—9/11/2012

. . . continued from page 2

flooding of roadways and residences in sub-divisions located adjacent to the Desert Rose Golf Course, through which both the Las Vegas Wash and Flamingo Wash flow. There were at least 60 instances of flood damage to property reported in this area. In addition, the media reported there were more than 20 incidents of stranded drivers needing assistance after their vehicles were inundated by flood water.

Flooding near Las Vegas Wash—9/11/2012, photo courtesy of KTNV News

Although a number of major washes were observed to be near design capacity during both storms, the complex network of flood control facilities throughout the Valley performed very well. "All indications are that our flood-control network worked as designed," said Gale Fraser, General Manager of the Regional Flood Control District, in an interview with the *Las Vegas Sun* following the August 22 storm. "There's no doubt in my mind that 10 years ago this (storm) would have caused a lot more problems."

Most of the areas where the most flooding damage occurred were in areas where the network has not been completed, reminding us that work still needs to be done to decrease the flood risk to the community.

For More Information

For more information, pictures, and videos of the storms in Clark County on August 22, 2012 and September 11, 2012, follow these links to the District's website (regionalflood.org):

August 2012: http://gustfront.ccrfcd.org/pdf_arch1/Flood%20Event%20Reports/2012-08-22.pdf

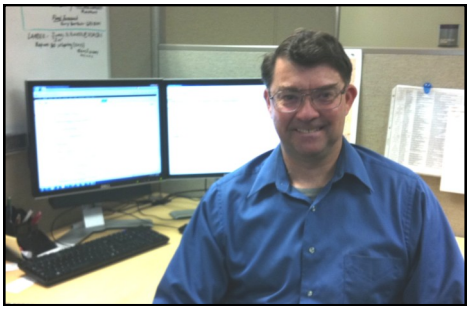
September 2012: http://gustfront.ccrfcd.org/pdf_arch1/Flood%20Event%20Reports/2012-09-11-Presentation.pdf

UNLV Parking Lot—0/11/2012, photo courtesy of Nick Ernst, KTNV News

CORRECTION . . .

The Spring 2012 issue of the Nevada Floodplain Management News incorrectly stated that **City of Mesquite** is a class 6 community participating in the Community Rating System (CRS). In fact, **Mesquite is a CRS class 7 community**.

Ken Lucas, GIS Specialist, Joins Nevada Floodplain Management Program



Ken Lucas, Geographic Information System (GIS) Specialist

The Nevada Floodplain Management Program is delighted to introduce Ken Lucas who has joined the program as a GIS Specialist, thanks to FEMA funding through a Cooperative Technical Partners (CTP) grant.

Ken relocated recently to Nevada from Lompoc, California where he worked in GIS map-making for the Air Force at Vandenberg Air Force Base. Prior to working for the Air Force, Ken worked in consulting specializing in forestry applications of GIS map-making for timber companies. Ken attended Humboldt State University and the College of the Redwoods majoring in forestry.

Ken will be assisting Luke Opperman with development of a *Nevada Flood Risk Portfolio* to document the status of flood hazard and other related information throughout the state, and to depict areas of need for flood hazard mapping and flood mitigation.

Ken says he is "Happy to be in Nevada." We in the Nevada Floodplain Management Program are happy that he's in Nevada too.

Nevada Flood History Database

The U.S. Army Corps of Engineers has selected for funding a Silver Jackets Pilot Project proposal to update and enhance the Nevada Flood History Database accessible on the U.S. Geological Survey (USGS) website at **nevada.usgs.gov/crfld/**.

The Nevada Flood History Database was developed by the USGS in 2005 and currently includes data only for the Carson River watershed. The Database includes information dating back to the earliest recorded flood events and relates historical accounts, photographs and videos to hydrologic data providing for both qualitative and quantitative understanding of the magnitude of past flood events.

Nevada Flood History Database, ***nevada.usgs.gov/crfld/***

Together with funding through a FEMA Cooperating Technical Partners grant, the Silver Jackets Pilot Project proposes to update data for the Carson River watershed, to add data for the Walker River watershed, and to make enhancements in functionality to the website For more information on the project, contact Kim Davis, **kadavis@water.nv.gov**.

13th Triennial ASFPM Arid Regions Conference

Every Drought....

Ends in a Flood

October 15-18, 2013
Scottsdale, AZ

Sponsored by
Arizona Floodplain Management Association

In partnership with the
ASFPM Arid Regions Committee

Biggert-Waters Flood Insurance Reform Act of 2012

The long anticipated Biggert-Waters Flood Insurance Reform Act of 2012 was signed into law on July 6, 2012. In addition to providing long-term reauthorization of the National Flood Insurance Program (NFIP) until September 30, 2017, the legislation contains many reforms and changes. The Association of State Floodplain Managers (ASFPM) has published a ***Summary of Contents*** some of which is excerpted below; the complete summary may be found at **www.floods.org.**

Flood Insurance

- For pre-FIRM structures, removes subsidized rates for specific classes of structures and allows rates to increase by 25% per year until actuarial rates are achieved. Specific classes include: secondary residential properties, business properties, new policy or lapsed policy, policy for newly purchased property (see ASFPM summary for complete list)
- Increases limit for annual rate increases within any risk classification from 10% to 20%
- Allows premium payments either annually or in installments
- Rate increases resulting from a new flood map shall have rates phased in over a 5-year period at 20% per year
- Requires a NFIP Reserve Fund of at least 1% of the total potential loss exposure
- Requires a 10-year repayment plan for current insurance fund debt

Mapping

- Establishes a Technical Mapping Advisory Council to advise FEMA on improving accuracy, on standards, and on funding needs and strategy
- Establishes a National Flood Mapping Program with authorization of $400,000,000 for flood mapping per year for fiscal years 2013-17 (This is an authorization level—not to be confused with actual annual appropriation)
- Formalizes a Scientific Resolution Panel to arbitrate community appeals of flood maps

Mitigation

- Consolidates NFIP funded mitigation grant programs (Flood Mitigation Assistance, Repetitive Flood Claims, Severe Repetitive Loss)
- Restructures federal share requirement:
    - Up to 100% for Severe Repetitive Loss structures
    - Up to 90% for Repetitive Loss structures
    - Up to 75% for other approved mitigation activities

Studies

- Requires an assortment of studies, including studies on: reinsurance and privatization, pre-FIRM structures, FEMA contractors, risk behind levees, flood insurance maintenance and affordability, . . . (see ASFPM summary for complete list)

Use of Flood Insurance Study (FIS) Data as Best Available Data

Download *FEMA Floodplain Management Bulletin 1-98, "Use of Flood Insurance Study (FIS) Data as Available Data"* from the FEMA Library: **www.fema.gov/library/viewRecord.do?id=2231**

For Approximate Zone A areas, when all appeals have been resolved and a Letter of Final Determination issued, communities are required to use the BFE and floodway data for regulating floodplain development since the data represents "best available data"

When National Flood Insurance Program (NFIP) participating communities are in the process of receiving an updated Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM), questions often arise concerning the community's responsibility for using draft or preliminary data as "best available data" for the purpose of regulating development. ***FEMA Floodplain Management Bulletin 1-98*** provides guidance on the use of FEMA draft or preliminary Flood Insurance Study data in such situations.

When a FEMA study contractor prepares a draft FIS, FEMA reviews and modifies, as appropriate, the draft FIS to ensure it complies with established NFIP criteria. Once FEMA has reviewed and approved the draft FIS, FEMA releases the Preliminary FIS and FIRM for review and comment during a statutory 90-day appeal period in accordance with 44 CFR 67. Until such time as the 90-day appeal period is completed and a Letter of Final Determination (LFD) has been provided, the Base Flood Elevation (BFE) and floodway data in the FIS are considered preliminary and subject to change.

Approximate Zone A

For Approximate Zone A Areas, the BFE and floodway data from a draft or preliminary FIS constitutes available data under 44 CFR 60.3(b)(4) which reads:

"Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source"

Communities are required to reasonably utilize the data from a draft or preliminary FIS under the section of their ordinance that applies to this paragraph. A community is allowed discretion in using this data only to the extent that the technical or scientific validity of the data in the draft or preliminary FIS is questioned.

When all appeals have been resolved and notice of final flood elevation determination has been provided in a LFD, communities are required to use the BFE and floodway data for regulating floodplain development since the data represents the "best available data."

Zones AE, A1-30, AH, and AO

The NFIP floodplain management criteria do not require communities to use BFE and floodway data from a draft or preliminary FIS in Zones AE, A1-30, AH, or AO in lieu of these data contained in an existing effective FIS and FIRM. Because communities are afforded the opportunity to appeal BFE data from a restudy, a presumption of validity is given to existing effective BFE data that has gone through the formal statutory appeals process and which has been adopted by the community.

In cases where BFEs increase in a restudied area, communities have the responsibility to ensure that new or substantially improved structures are protected. While FEMA can not mandate or require a community to use BFE and floodway data in a draft or preliminary FIS as available data, FEMA encourages communities to reasonably utilize this information.

In cases where BFEs decrease, the community should not use this information to regulate floodplain development until the LFD has been issued and appeals have been resolved. Additionally, mandatory purchase of flood insurance and insurance premiums will be based on the FIRM effective at the time.

Scour Potential and Zone AO Regulations

On Flood Insurance Rate Maps, AO Zones depict shallow flooding areas where FEMA typically provides a flow velocity as well as a base flood depth. As in Zones AE and AH, NFIP regulations require that new and substantially improved construction have lowest floors elevated to at least the base flood depth or base flood elevation, and include other non-elevation flood resistance requirements (e.g. adequate flood venting, protection of attendant utilities and machinery, use of flood resistant materials, etc.).

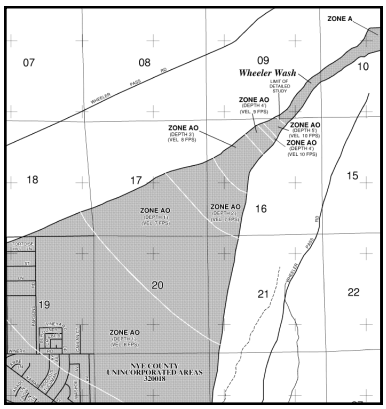
However, for AO and AH Zones, NFIP regulations in 44 CFR 60.3(c)(11) have an additional requirement for structures on slopes:

> *"Require within Zones AH and AO, adequate drainage paths around structures on slopes, to guide floodwaters around and away from proposed structures"*

Scour is localized erosion caused by the entrainment of soil or sediment around flow obstructions, often resulting from flow acceleration and changing flow patterns due to flow constriction. Erosion around foundations depends on velocity, flow direction, and duration of exposure. For new construction or substantial improvement where flow impinging on a structure is affected by diversion and constriction due to nearby structures or other obstructions, flow conditions estimated for the calculation of depths of scour should be evaluated by a qualified engineer.

The effects of flood loads on buildings can be exacerbated by flood-induced erosion and localized scour, and by long-term erosion, all of which can lower ground surface around foundation elements and cause the loss of load-bearing capacity and loss of resistance to lateral and uplift loads.

The potential for foundation scour is a complex problem. Granular and other consolidated soils in which the individual particles are not cemented to one another are subject to scour, erosion, and transport by the force of moving water. The greater the velocity or turbulence of the moving water, the greater the scour potential. Soils that contain sufficient proportions of clay to be described as compact are more resistant to scour than the same grain sizes without clay as an inter-granular bond. Likewise, soils with angular particle shapes tend to lock in place and resist scour forces.

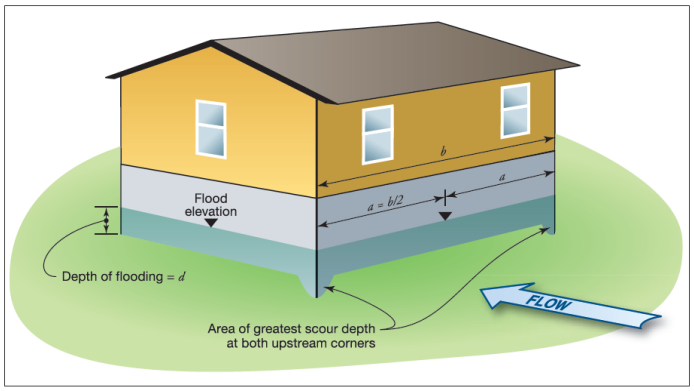


Alluvial fan flooding is depicted on a Flood Insurance Rate Map (FIRM) as Zone AO, with flood depth and velocity.

Shallow foundations in areas subject to flood velocity flow may be subject to scour and appropriate safeguards should be undertaken. The safeguards may include the use of different, more erosion resistant soils, deeper foundations, surface armoring of the foundation and adjacent areas, and the use of piles or other foundations that present less of an obstruction to floodwater.

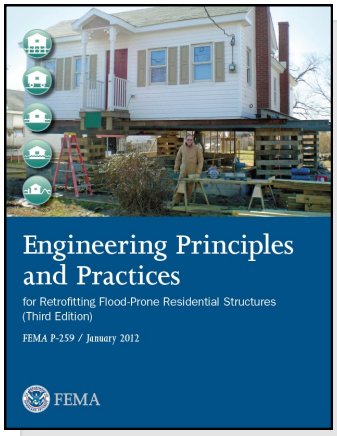
Where elevation on fill is the primary retrofitting (flood protection) measure, embankments must be protected against erosion and scour.

44 CFR 60.3 (c) (11) Require within Zones AH and AO, adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures



Scour action on a ground level building

Additional information and guidance for flood-resistant design and engineering, including designing for flood scour, may be found in *FEMA P-259, Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures (Third Edition), January 2012.*



FEMA Extends PRP Eligibility

On August 21, 2012, FEMA announced that it would extend the eligibility for a Preferred Risk Policy (PRP) flood insurance premium for buildings newly mapped into a Special Flood Hazard Area (SFHA) as a result of a map change on or after October 1, 2008. While FEMA completes a study and analysis to develop an implementation strategy for the Biggert-Waters Flood Insurance Reform Act of 2012, policies written as PRPs under the PRP Eligibility Extension may continue to be renewed as PRPs beyond the previously designated 2-year eligibility period.

Under the initial 2-year PRP Eligibility Extension, buildings newly mapped into a SFHA on or after October 1, 2008, became eligible for the PRP for 2 years beginning on January 1, 2011. Buildings newly mapped into an SFHA on or after January 1, 2011, were also eligible for the PRP during the 2-year period following the map revision date. At the end of the 2-year period, the policies were required to be rewritten as standard-rated policies.

With FEMA's announcement, beginning with the first renewal effective on or after January 1, 2013, policies issued under the PRP Eligibility Extension that meet the PRP loss history requirements will not be transitioned into standard X-zone rating, but will continue to be issued as PRPs at each renewal until further notice. Under the extension, new-business PRPs may also continue to be issued for properties newly mapped into the SFHA as a result of a map revision that became effective on or after October 1, 2008

FHA Loans for Manufactured Homes in Special Flood Hazard Areas

24 CFR 203.43(c)(i) and (d)(ii) require that the finished grade beneath the manufactured home shall be at or above the 100-year return frequency flood elevation

An **FHA insured loan** is a mortgage loan backed by the **Federal Housing Administration** that is provided by a FHA-approved lender. FHA insured loans have historically allowed lower income Americans to borrow money for the purchase of a home that they might not otherwise be able to afford.

The flood zone requirements and responsibilities of FHA Mortgagees and Appraisers are defined in U.S. Department of Housing and Urban Development (HUD) **Mortgagee Letter 2009-37** issued by the Assistant Secretary for Housing-Federal Housing Commissioner on October 1, 2009. This letter reminds mortgagees and FHA Roster appraisers of their responsibility to determine if a property is located within a Special Flood Hazard Area (SFHA) and reiterates the FHA's eligibility requirements for properties located in such zones.

For new and proposed construction, existing construction and condominiums, the eligibility requirements concerning building standards for structures are consistent with the minimum NFIP floodplain management requirements of 44 CFR 60.3. However, for manufactured homes, the building standard required for eligibility for a FHA-insured loan is higher than the NFIP standard.

Manufactured Home Eligibility

HUD regulation in 24 CFR 203.43(c)(i) and (d)(ii) require that the finished grade beneath the manufactured home shall be at or above the 100-year return frequency flood elevation. To be eligible for FHA financing:

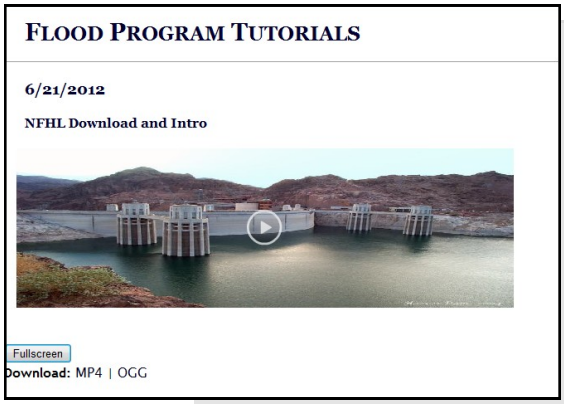
- In Zones AE, AO or AH with defined Base Flood Elevations (BFEs) or Base Flood Depths (BFDs), all manufactured homes (regardless if they are new or existing) in SFHAs must *provide evidence on an Elevation Certificate that their finished grade (not their Lowest Floor Elevation as NFIP requires) is at or above the BFE or BFD*.
- In Approximate A Zones, where FEMA has not established a BFE, the surveyor who completes the Elevation Certificate can use a community established BFE. The finished grade of the manufactured home must be at or above the estimated BFE to qualify for FHA financing.

Tutorial on Using the National Flood Hazard Layer With Google Earth

The Nevada Floodplain Management Program has posted a tutorial video on how to download the FEMA National Flood Hazard Layer for use with Google Earth. **Luke Opperman** walks you through the steps to set up your computer, to view the official FEMA flood zone information with the free Google Earth application that you may have already installed on your computer.

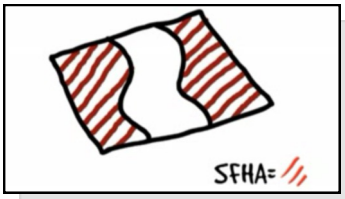
The map data in the National Flood Hazard Layer are from Digital Flood Insurance Rate Map (DFIRM) databases and Letters of Map Revision (LOMRs). The NFHL provides DFIRM and LOMR data as one integrated dataset. Also, the NFHL is a dynamic dataset and FEMA incorporates DFIRM and LOMR data as they become effective.

Find the NFHL tutorial at **water.nv.gov/programs/flood/tutorials.cfm**



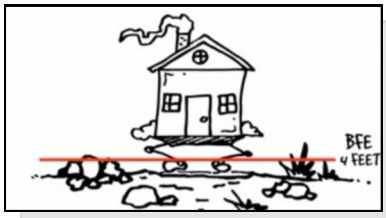
FLINGO—The NFIP on You Tube

What is FLINGO? You might say that it is the NFIP for the next generation.



H2O Partners, Inc., a Texas based consulting company selected by FEMA to support outreach and training for Risk-MAP and the NFIP, has developed a series of fun You Tube videos that have a serious purpose. The FLINGO (Flood Lingo) videos cover a variety of NFIP related topics, such as Elevation Certificates, Community Rating System, Flood Insurance Rate Maps, and NFIP Grandfathering in a way that is both entertaining and engaging. Through animation, the FLINGO videos explain concepts such as Base Flood Elevation, Severe Repetitive Loss, and Increased Cost of Compliance coverage in an accessible and understandable format.

To find the FLINGO videos, search on "flingo flood forum" on You Tube. On the internet, go to **nfiptraining.com/FLINGO.html**.



Flood Apps for Your Mobile Device

FloodWatch

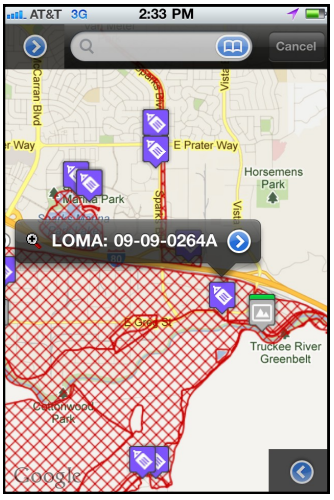
A flood monitoring application developed by DSG Technology, LLC. FloodWatch allows users to monitor rivers and streams throughout the country by leveraging data from the U.S. Geological Survey and the National Weather Service. Free

FloodMap

A flood mapping application for mobile devices developed by Atkins North America, Inc. FloodMap shows FEMA Special Flood Hazard Layers, Letters of Map Change data, and much more. Cost $1.99

FMA Mobile

Access Floodplain Management Association (FMA) forums on floodplainforum.org directly from your Apple device. Developed by Atkins North America, Inc. Free



FloodMap shows FEMA flood zones and Letters of Map Change with links to LOMC images.

NDWR

NEVADA FLOODPLAIN MANAGEMENT NEWS
Nevada Division of Water Resources
901 South Stewart Street, Suite 2002
Carson City, Nevada 89701

Phone: 555-555-5555
Fax: 555-555-5555
E-mail: someone@example.com

To subscribe send email request to:

nvflood@water.nv.gov

Nevada Floodplain Management News is a publication of the Nevada Floodplain Management Program.

The Nevada Floodplain Management Program was established in the Department of Conservation and Natural Resources, Division of Water Planning by the 1997 Nevada State Legislature after the need for a statewide flood management program became apparent when damages from the 1997 New Years Flood on the Truckee River were assessed.

In the Spring of 2001 the Nevada Floodplain Management Program was transferred within the Department of Conservation and Natural Resources and was later confirmed by Governor's Executive Order, dated April 10, 2003, to its current residence within the Division of Water Resources under the direction of the Nevada State Engineer.

Nevada Flood Hazard Mapping Update

For more information contact **Luke Opperman, lopperman@water.nv.gov.**

Carson City	**Vicee, Ash & Kings Canyon PMR**	Publication in the Federal Register was approved and submitted. Approximate date for publication November 2012.
Douglas County	**Pine Nut Creek PMR**	LOMR for Pine Nut Creek, Cottonwood Slough and Martin Slough near Gardnerville. LOMR effective date October 22, 2012.
Elko County	**West Wendover Appeal Resolution**	Appeal resolved. Elko County countywide DFIRMs approximate LFD March 2013, approximate DFIRM effective date September 2013.
Lander	**County Wide DFIRM**	Approximate LFD date January 2013.
Lyon	**Carson River Study (CTP-CWSD)**	Detailed Study of Carson River near Dayton. CWSD held RiskMAP Discovery meeting for Carson River watershed. Discovery input due October 11, 2012.
Lyon	**Walker River PMR**	FEMA contractor will be modeling a split flow using a 2-D model.
Mineral	**County Wide DFIRM**	Effective date of countywide DFIRMs February 2013.
Nye County	**Pahrump Valley PMR**	Coordination between FEMA and community to possibly revise portions of DFIRMs during comment period. FEMA compiling comments and supporting data.
Washoe County	**Evans Creek and White Lake PMR**	Community comments have been reflected in revised maps. Approximate LFD December 2012, approximate DFIRM effective date June 2013.

PMR - Physical Map Revision; LOMR - Letter of Map Revision; LFD—Letter of Final Determination; DFIRM - Digital Flood Insurance Rate Map; CTP - Cooperating Technical Partner; CWSD - Carson Water Subconservancy District